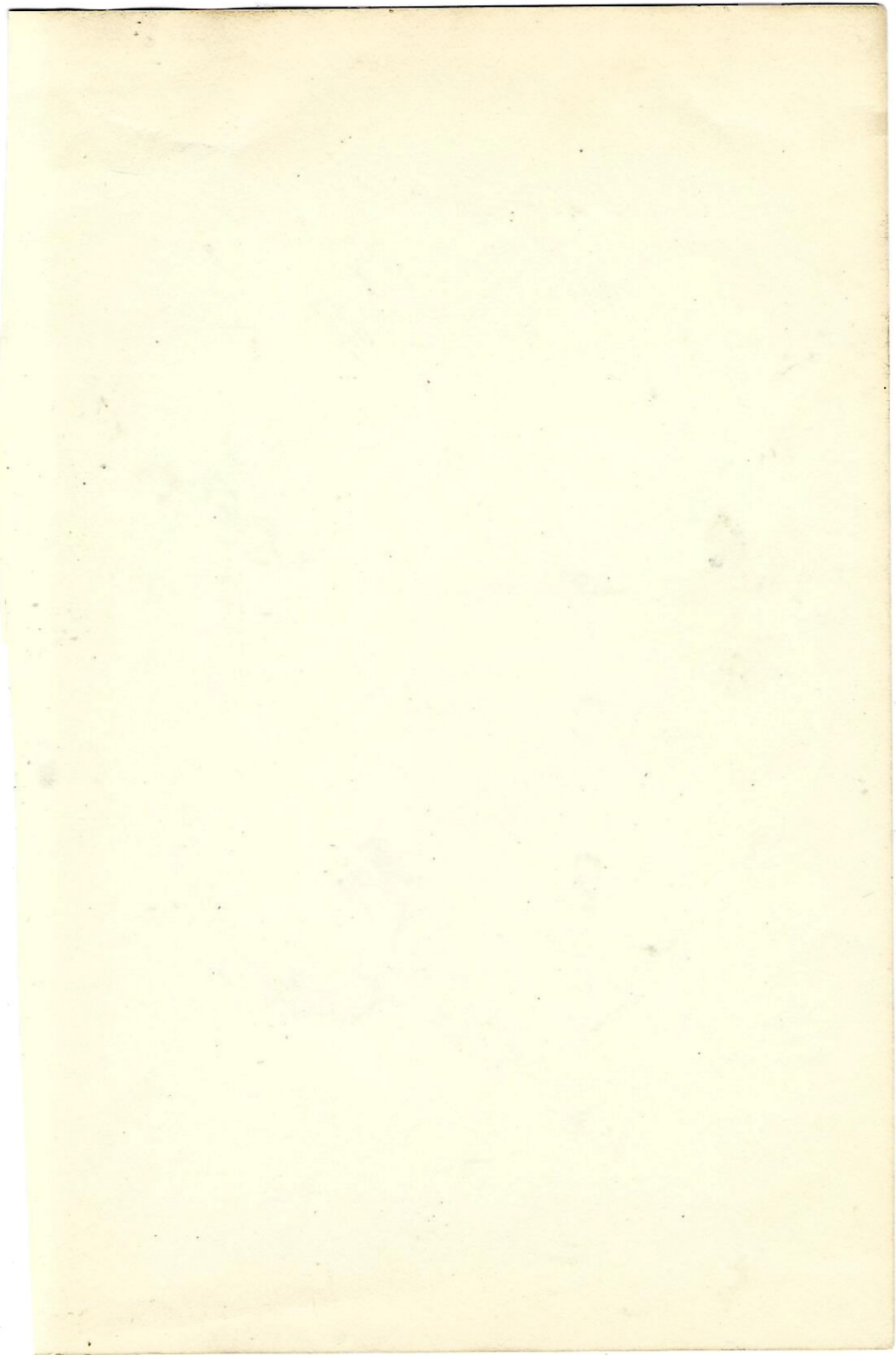




**Making Sure
of
Arithmetic**





Robert Lee Morton • Merle Gray
Elizabeth Springstun • William L. Schaaf

Making Sure of Arithmetic

SILVER BURDETT COMPANY

New York Chicago Dallas San Francisco

FOREWORD

In preparing the New Edition of MAKING SURE OF ARITHMETIC, the goal has been to keep this series the finest learning tool in the field. Each book has been extensively revised, redesigned, and completely reillustrated.

As in the earlier edition, first attention is given to the way the child learns. How can we give him the security of understanding which he needs and wants? How can we help him develop a sense of sureness and confidence in his own everyday uses of arithmetic?

The authors of MAKING SURE OF ARITHMETIC believe these things can be done only by the most careful development of each new idea; by immediately providing rich and extensive experience in using the idea; by maintaining skill and facility in using it; by constantly calling attention to relationships; and perhaps most important of all, by recognizing that the child does not learn "all at once" but must be consistently given the opportunity to re-learn and to deepen understanding.

This means re-teaching the basic ideas of arithmetic at each grade level. It means the maintaining, enriching, and extending of earlier learnings as well as the beginning of new learnings. Only in this way can we make sure of the child's continuous growth in understanding and skill.

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Illustrated by Florian



MAKING SURE OF WHAT YOU HAVE LEARNED

Across the Continent by Plane and Train

The modern streamlined train shown in the picture on the opposite page is speeding across the United States. Above the train a large, four-engine airplane is winging its way from coast to coast.

Today travel is swift and comfortable, while in early days it was slow and difficult.

The sentences below tell ways in which travel has changed. Read the sentences and answer the questions. Notice how numbers are used in these problems.

1. In 1930, passenger airplanes made coast-to-coast flights in 28 hours. This is one day and how many hours?
2. Ten years later, airplanes flew regularly across the continent in 16 hours. This is how many hours less than one day?
3. In 1950, the trip was made by airplane in 12 hours. This is what part of a day?
4. The first railroad to cross the country was finished in the year 1869. Then the trip could be made by train in 7 days. How many trips could be made in four weeks?
5. In 1925, it took 4 days to make the trip by train. This is how many days less than a week?
6. Now a train can travel from New York to Chicago in only 16 hours, and from Chicago to San Francisco in 40 hours. At this rate, how many hours would it take to travel all the way across the United States?

Understanding Numbers

Any number from 1 through 9 is a **one-place number**. For example, the number 8 is a one-place number; it means eight ones. Any number from 10 through 99 is a **two-place number**. The two-place number 35 means 3 tens and 5 ones. The figure 5 means 5 ones because it is in ones' place. The figure 3 means 3 tens because it is in tens' place.

The place, or position, of a figure in a number shows what the figure means in that number, or what its value in that number is. This is what we mean by **place value**.

In the **three-place number** 248, the 8 is in ones' place and therefore means 8 ones. The 4 is in tens' place and therefore means 4 tens. The 2 is in hundreds' place and therefore means 2 hundreds.

In the number 40, the zero in ones' place shows that there are no ones. The zero also shows that the 4 means 4 tens.

In the number 500, the two zeros show that there are no ones in ones' place and no tens in tens' place. They also show that the 5 means 5 hundreds. What does the zero show in the number 308?

In a **four-place number**, the figure in fourth place is read as thousands. How many thousands are there in the number 6850? What does the 8 mean? the 5? the 0?

► When a number has five or six figures, it can be read more easily if a comma is used to separate the three figures at the right from the others. The figures at the left of the comma are read as thousands. Sometimes a comma is used in a four-place number also.

The comma is often omitted in working with large numbers — especially in multiplying and dividing.

Understanding Larger Numbers

In a recent year, 358,462 airplanes landed at or departed from the two major airports in Chicago.

The number 358,462 has six figures and is called a **six-place number**. Each place has a name which is shown at the right.

3	5	8	,	4	6	2
hundred-thousands	ten-thousands	thousands		hundreds	tens	ones

We read this number, "three hundred fifty-eight thousand, four hundred sixty-two."

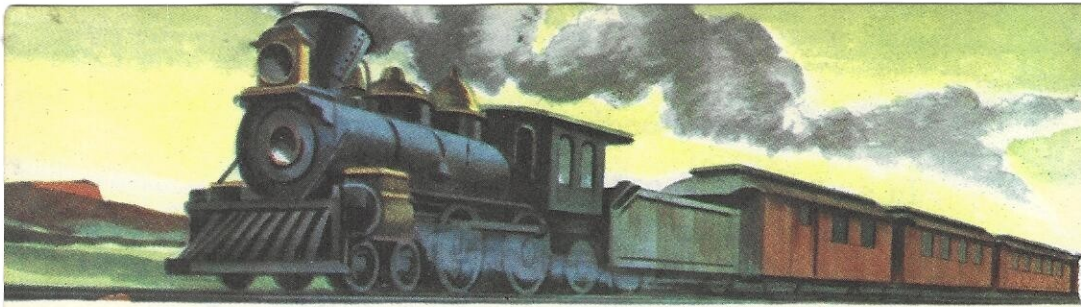
Beginning at the left and reading toward the right, we see that:

3, the sixth figure from the right, is in hundred-thousands' place	300,000
5, the fifth figure, is in ten-thousands' place	50,000
8, the fourth figure, is in thousands' place	8,000
4, the third figure, is in hundreds' place	400
6, the second figure, is in tens' place	60
2, the first figure, is in ones' place	2
	358,462

1. Read the number 876,532. How many thousands does the 8 mean? the 7? the 6? Does the 5 in 876,532 mean the same as the 5 in 358,462? Does the 2 in 876,532 mean the same as the 2 in 358,462?

2. Tell the name of the place of each figure in the numbers below. Tell what each figure means.

89	175	3,485	12,276	125,456
90	208	9,200	45,001	250,500



Reading and Writing Numbers

In 1850, there were 9,021 miles of railroad in the United States. This is read, "nine thousand, twenty-one."

By 1880, there were 93,267 miles. This is read, "ninety-three thousand, two hundred sixty-seven."

In a recent year, there were 225,149 miles of railroad in this country. We read this number, "two hundred twenty-five thousand, one hundred forty-nine."

When reading large numbers, remember two things:

1. Pause at places where there are commas.
2. Never use the word *and* to connect parts of a whole number.

SAY THIS:

NOT THIS:

Six hundred forty-two 642 Six hundred *and* forty-two

Some numbers may be read in more than one way. For example, the number 2540 may be read as "two thousand, five hundred forty" or "twenty-five hundred forty."

1. Read the following numbers:

A	B	C	D	E	F
5,004	8,101	26,478	43,050	550,505	718,285

Copy the numbers below. Put commas where they belong, so that you can read the numbers easily.

2. 9001 8100 7810 6025 10500 15865
3. 14010 20000 125480 480506 100000 989009

Write these numbers in figures. Be sure to write zeros where they belong.

4. Four thousand, five hundred sixteen
5. Twenty-five thousand, four hundred eighty-five
6. Nine thousand, eight hundred six
7. A. Eight thousand, five hundred. B. Ten thousand
8. A. Five thousand, fifty. B. Six thousand, eight

Write these numbers in words:

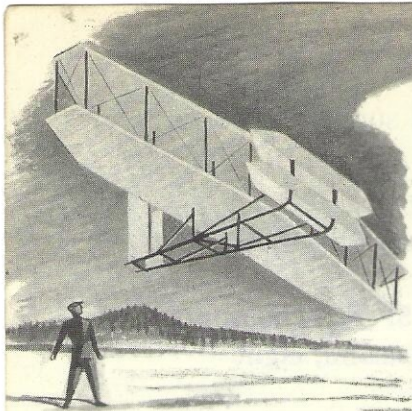
- | | | | | |
|-----------|-------|--------|---------|---------|
| 9. 2,375 | 1,007 | 8,905 | 2,400 | 231,506 |
| 10. 3,147 | 4,505 | 10,623 | 907,260 | 10,000 |

Read these sentences. Write the numbers in figures.

11. By highway U. S. 40, the distance from San Francisco to Atlantic City is three thousand, one hundred sixty-seven miles.
12. The air-line distance from San Francisco to New York City is two thousand, five hundred eighty miles.
13. The distance by one railroad route from San Francisco to New York City is three thousand, one hundred seventy-one miles.
14. By way of the Panama Canal, it is six thousand, fifty-two miles by water from New York City to San Francisco.
15. By air, it is four thousand, nine hundred two miles from New Orleans to Buenos Aires, Argentina.

Locate these places on a map or globe. As you read each number, notice the distance it represents on the map.





Reading and Writing Dates

The first airplane to make a successful flight was invented by Wilbur and Orville Wright.

Wilbur Wright was born on April 16, 1867. This date can be read, "April sixteenth, eighteen hundred sixty-seven."

We usually shorten this and read it, "April sixteenth, eighteen sixty-seven."

Read the following sentences:

1. Orville Wright was born on August 19, 1871.
2. Orville Wright made the first successful airplane flight on December 17, 1903.
3. The plane, called the *Kitty Hawk*, in which he made his flight, was placed in the Smithsonian Institution, in Washington, D. C., on December 17, 1948.
4. In 1848, John Stringfellow, an Englishman, built a model airplane that flew 120 feet.
5. In 1909, Louis Blériot, of France, made the first flight across the English Channel.
6. In 1927, Charles Lindbergh made the first non-stop flight from New York to Paris.

In writing dates we often abbreviate the names of the months. Instead of "February 12, 1809," we may write, "Feb. 12, 1809."

Find the date on this year's calendar for each of the following days. Also find the day of the week, and write each date this way: Saturday, Dec. 27, 1952.

Your birthday

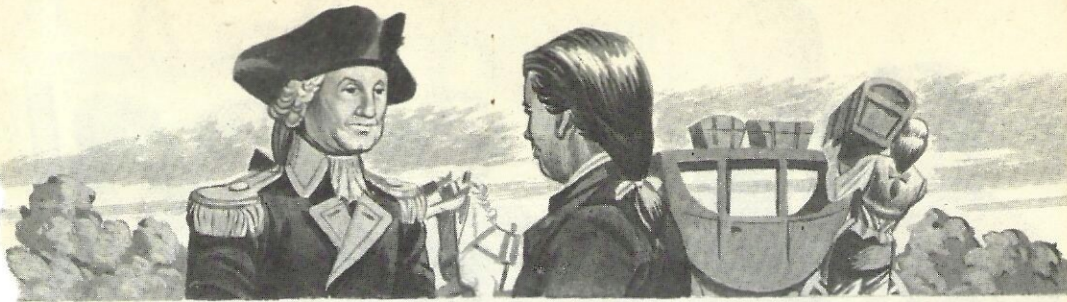
Next Wednesday

Halloween

The first day of school

United Nations' Day

Columbus Day



Sentences with Numbers

Each of these statements uses numbers to give interesting information about travel. Read each statement.

1. While George Washington was president, he made a trip of 1,889 miles by stagecoach.
2. One long train of covered wagons, carrying 1,000 people, traveled to Oregon in 1843.
3. The *Tom Thumb*, the first locomotive built in the United States, weighed about 2,000 pounds.
4. Today a lightweight passenger-train locomotive weighs about 330,000 pounds.
5. A heavy passenger-train locomotive weighs as much as 740,000 pounds.
6. One *Stratocruiser* that carries passengers between New York City and London weighs about 140,000 pounds.
7. The highest point reached by a railroad in the United States is the top of Pikes Peak in Colorado, 14,109 feet above sea level.
8. The distance around the earth at the equator is a little less than 25,000 miles.
9. Wiley Post in his flight around the world in 1933 covered 15,596 miles.
10. In 1947, William Odom traveled 19,645 miles in making a flight around the world.

Write a sentence using numbers to tell how far you have traveled on some trip you have taken.



When Do We Add?

The boys and girls in Central School were having a hobby show. You can see in the picture what some of their hobbies were.

Read each problem below carefully and write the answers to the questions asked.

1. How many boys are showing model coaches, wagons, trucks, trains, or airplanes? How many models are shown altogether?
2. Three girls are collecting dolls. One girl has 8 dolls, one has 14, and one has 3. How many dolls do they have in all?
3. One boy has 84 stamps from foreign countries. Another has 213 United States stamps. How many stamps do these boys have?
4. Some boys and girls are collecting small china or glass animals. One girl has 24 china cats. One boy has 15 little elephants. How many animals do the two children have?
5. Some children are working at their hobbies. Twelve children are working in clay, 14 are painting, and 3 are weaving. How many children are working at their hobbies?
6. The boy who made the model airplanes paid \$1.25 for one of his model airplane kits, \$1.50 for another, and \$1.00 for another. How much did he pay for these kits?

► Did you notice that in each question you were asked to find **how many** or **how much**? To find the answer to the questions, you added. When you add, the answer is the **total number** of things, or the **total amount**. In addition, the answer is called the **sum**.

► The plus sign (+) tells us to add: $8 + 7 = 15$. We read this, "8 and 7 are 15," or "8 plus 7 equal 15."

Do You Know the Addition Facts?

There can be no "guesswork" about arithmetic. An answer is either *right* or *wrong*. To add without making mistakes, you must know the addition facts perfectly. Test yourself.

Write the sums on folded paper. Check your work. Write on cards any facts you do not know. Study them. Test yourself until you can make a perfect score.

	A	B	C	D	E	F	G	H	I
1.	$\begin{array}{r} 2 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 1 \\ \hline \end{array}$
2.	$\begin{array}{r} 7 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 9 \\ \hline \end{array}$
3.	$\begin{array}{r} 5 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 5 \\ \hline \end{array}$
4.	$\begin{array}{r} 3 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 2 \\ \hline \end{array}$
5.	$\begin{array}{r} 6 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 2 \\ \hline \end{array}$
6.	$\begin{array}{r} 5 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 7 \\ \hline \end{array}$
7.	$\begin{array}{r} 6 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 1 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 5 \\ \hline \end{array}$
8.	$\begin{array}{r} 2 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 2 \\ \hline \end{array}$
9.	$\begin{array}{r} 1 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 9 \\ \hline \end{array}$

Using the Addition Facts in Examples

1. In the example at the right, there is a zero in the ones' column. The zero shows that there are no ones in that place. Since there is nothing to add to the 6, write 6 in ones' place in the sum. Add the tens: 2 and 4 are 6. Write 6 in tens' place. The sum is 66.

$$\begin{array}{r} 26 \\ 40 \\ \hline 66 \end{array}$$

2. In this example, the two zeros show that there are no ones in ones' place. Since there are no ones to add, write 0 in ones' place in the sum. Then add the tens.

$$\begin{array}{r} 20 \\ 30 \\ \hline 50 \end{array}$$

Write the sums for these examples on folded paper:

	A	B	C	D	E	F	G	H	I
3.	$\begin{array}{r} 30 \\ 83 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ 60 \\ \hline \end{array}$	$\begin{array}{r} 92 \\ 26 \\ \hline \end{array}$	$\begin{array}{r} 46 \\ 91 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ 90 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ 84 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ 30 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ 76 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ 90 \\ \hline \end{array}$
4.	$\begin{array}{r} 63 \\ 44 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ 77 \\ \hline \end{array}$	$\begin{array}{r} 82 \\ 85 \\ \hline \end{array}$	$\begin{array}{r} 73 \\ 96 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ 62 \\ \hline \end{array}$	$\begin{array}{r} 82 \\ 73 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ 30 \\ \hline \end{array}$	$\begin{array}{r} 65 \\ 83 \\ \hline \end{array}$	$\begin{array}{r} 97 \\ 52 \\ \hline \end{array}$
5.	$\begin{array}{r} 51 \\ 98 \\ \hline \end{array}$	$\begin{array}{r} 72 \\ 42 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ 50 \\ \hline \end{array}$	$\begin{array}{r} 74 \\ 83 \\ \hline \end{array}$	$\begin{array}{r} 95 \\ 74 \\ \hline \end{array}$	$\begin{array}{r} 87 \\ 40 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ 91 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ 62 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ 84 \\ \hline \end{array}$

How to Add, and Check Your Own Work

When adding numbers, begin at the top of each column and add down. In doing the work shown at the right, think, 4 and 5 are 9, and 3 are 12. Write 12.

Work	Check
$\begin{array}{r} 4 \\ 5 \\ 3 \\ \hline 12 \end{array}$	$\begin{array}{r} 4 \\ 5 \\ 3 \\ \hline 12 \end{array}$

Check the work by adding again. This time start at the bottom of the column and add up. Think, 3 and 5 are 8, and 4 are 12. Write 12.

If the two sums are the same, your work is probably correct.

Adding One-Place Numbers to Two-Place Numbers

Each example below is in one way like, or similar to, an addition fact which you know. When you see 16 and 2, think of 6 and 2. You know that 6 and 2 are 8, so 16 and 2 are 18.

The example 24 and 3 is similar to 4 and 3. You know that 4 and 3 are 7, so 24 and 3 are 27.

Do you see how the example 31 and 8 is like 1 and 8? What is the sum of 31 and 8?

Look at these examples and say the sums:

	A	B	C	D	E	F	G	H	I
1.	$\begin{array}{r} 16 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 31 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 27 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 33 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 21 \\ 5 \\ \hline \end{array}$
2.	$\begin{array}{r} 23 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 34 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 23 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 32 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 22 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 4 \\ \hline \end{array}$

Read these problems and say the sums:

3. Anne had 23 U. S. Savings Stamps and bought 6 more. How many stamps did she have then?
4. In a baseball game, one team made 14 runs and the other team made 5. How many runs were made in all?
5. Sally paid 22 cents for a ticket to a high-school play and 6 cents for a candy bar. How much did she spend altogether?
6. Mrs. Scott bought 34 Christmas cards and found that she needed 3 more. How many cards did she buy altogether?
7. Roy had 33 phonograph records. He received 5 more on his birthday. How many records did he have then?

The examples below are all similar to 8 and 4. You can tell the sum of each if you know the sum of 8 and 4.

	A	B	C	D
$\begin{array}{r} 8 \\ 4 \\ \hline 12 \end{array}$	$\begin{array}{r} 18 \\ 4 \\ \hline 22 \end{array}$	$\begin{array}{r} 28 \\ 4 \\ \hline 32 \end{array}$	$\begin{array}{r} 38 \\ 4 \\ \hline 42 \end{array}$	$\begin{array}{r} 48 \\ 4 \\ \hline 52 \end{array}$

Look at Example A. When you see 18 and 4, think of 8 and 4. You know that 8 and 4 are 12. The sum of 18 and 4 is a number similar to 12, but it is in the twenties. The sum is 22.

Look at Example B. In this example, 28 and 4 are similar to 8 and 4. The sum is in the thirties; 28 and 4 are 32.

Study the other examples. Can you see at once that the sum of 38 and 4 is 42?

Will the sum of 48 and 4 be a number in the fifties?

With a little practice, you will find it easy to look at an example such as 17 and 7 and think of the sum. The sum is 24. In the example 38 and 9, you will think quickly 47. Try to do this as you look at each example below.

Write the sums for these examples on folded paper:

	A	B	C	D	E	F	G	H
8.	$\begin{array}{r} 17 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 28 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 25 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 29 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ 8 \\ \hline \end{array}$
9.	$\begin{array}{r} 44 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 37 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 68 \\ 5 \\ \hline \end{array}$
10.	$\begin{array}{r} 77 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 49 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 88 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 45 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 76 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 73 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 58 \\ 2 \\ \hline \end{array}$
11.	$\begin{array}{r} 58 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 46 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 68 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 25 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 76 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 88 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ 7 \\ \hline \end{array}$

Easy Column Addition

In this set of examples you will add one-place numbers to two-place numbers. In the first example you think, 6 and 6 are 12; and 1, 13; and 9, 22.

Write the sums, using folded paper.

	A	B	C	D	E	F	G	H	I
1.	6	3	7	4	8	6	9	7	3
	6	8	9	7	6	5	6	7	9
	1	2	8	3	2	8	5	6	3
	<u>9</u>	<u>7</u>	<u>1</u>	<u>7</u>	<u>9</u>	<u>8</u>	<u>8</u>	<u>3</u>	<u>9</u>
2.	9	7	1	7	9	8	8	3	9
	1	2	8	3	2	8	5	6	3
	6	8	9	7	6	5	6	7	9
	<u>6</u>	<u>3</u>	<u>7</u>	<u>4</u>	<u>8</u>	<u>6</u>	<u>9</u>	<u>7</u>	<u>3</u>

Did you notice that Row 2 is a check on Row 1? The numbers in the examples are the same, but in Row 2 they are arranged in the opposite order. The bottom number is at the top, and so on. Are your sums the same in both rows?

Write the numbers below in columns and add. Check your work.

A	B
3. $6 + 7 + 2 + 8$	$8 + 3 + 9 + 5$
4. $9 + 5 + 4 + 6$	$7 + 8 + 7 + 6$
5. $7 + 4 + 7 + 5$	$4 + 9 + 5 + 4$
6. $6 + 8 + 5 + 7$	$5 + 7 + 7 + 1$
7. $9 + 4 + 4 + 7$	$8 + 4 + 5 + 6$
8. $1 + 9 + 3 + 8$	$8 + 7 + 6 + 7$
9. $6 + 4 + 8 + 8$	$6 + 9 + 4 + 6$
10. $8 + 9 + 1 + 9$	$4 + 8 + 2 + 9$
11. $5 + 8 + 3 + 4$	$7 + 5 + 6 + 3$

Carrying in Addition

Sally sold 38 boxes of greeting cards one month and 24 the next month. How many boxes did she sell in the two months?

$$\begin{array}{r}
 38 \text{ means } 30 + 8, \text{ or } 3 \text{ tens} + 8 \text{ ones} \\
 24 \text{ means } 20 + 4, \text{ or } 2 \text{ tens} + 4 \text{ ones} \\
 \hline
 62
 \end{array}$$

Sally added. If she were to tell you exactly how she added, she would say: "I added 8 ones and 4 ones to make 12 ones. Twelve ones equal 1 ten and 2 ones. I wrote the 2 ones in ones' place and carried the 1 ten to the top of tens' column. I thought, 1 and 3 are 4, 4 and 2 are 6. I wrote 6. The sum is 6 tens and 2 ones, or 62."

Sally found she had sold 62 boxes of greeting cards.

When we add, we carry, without writing, the number of tens in ones' column to the top of tens' column.

Copy the examples below. Add and check.

	A	B	C	D	E	F	G	H
1.	<u>22</u> <u>18</u>	<u>35</u> <u>47</u>	<u>54</u> <u>36</u>	<u>68</u> <u>15</u>	<u>78</u> <u>23</u>	<u>19</u> <u>47</u>	<u>66</u> <u>28</u>	<u>47</u> <u>19</u>
2.	<u>76</u> <u>64</u>	<u>48</u> <u>38</u>	<u>59</u> <u>56</u>	<u>68</u> <u>77</u>	<u>87</u> <u>23</u>	<u>45</u> <u>26</u>	<u>87</u> <u>34</u>	<u>73</u> <u>19</u>
3.	<u>23</u> <u>67</u>	<u>39</u> <u>99</u>	<u>19</u> <u>65</u>	<u>22</u> <u>89</u>	<u>36</u> <u>37</u>	<u>85</u> <u>88</u>	<u>69</u> <u>68</u>	<u>56</u> <u>69</u>
4.	<u>17</u> <u>75</u>	<u>68</u> <u>84</u>	<u>21</u> <u>49</u>	<u>35</u> <u>79</u>	<u>48</u> <u>59</u>	<u>84</u> <u>48</u>	<u>37</u> <u>58</u>	<u>49</u> <u>41</u>

Adding Columns of Numbers

1. In his kennels, Mr. Hart had 28 cocker spaniels, 36 English setters, and 45 Scottish terriers. How many dogs did he have?

To find the total number, you add. Think, 8 and 6 are 14; and 5, 19. Write 9 and carry 1 ten to tens' column. Think, 1 and 2 are 3; and 3, 6; and 4, 10. Write 10. Mr. Hart had 109 dogs.

$$\begin{array}{r} 28 \\ 36 \\ 45 \\ \hline 109 \end{array}$$

Copy the examples below. Add, and check your work.

	A	B	C	D	E	F	G	H
2.	36	68	46	38	7	52	9	85
	29	29	35	54	74	20	96	8
	<u>32</u>	<u>10</u>	<u>7</u>	<u>49</u>	<u>72</u>	<u>29</u>	<u>23</u>	<u>6</u>
3.	4	23	7	42	79	46	89	95
	6	45	68	21	8	87	73	80
	55	30	16	52	42	44	47	4
	<u>67</u>	<u>63</u>	<u>92</u>	<u>49</u>	<u>5</u>	<u>56</u>	<u>4</u>	<u>5</u>

4. In four weeks Mr. Brown sold 24, 18, 36, and 9 dogs. How many dogs did he sell altogether?





Adding Scores

When we keep scores in games, we often have to add columns of several numbers. Sometimes we find a zero in the column. Why? When we do, we skip over it, because there is nothing there to add.

Below are some scores made by children playing ring toss. Copy these scores and add. Check your work.

MARY	TOM	JEAN	FRED	JIM	AMY	DICK
4	8	9	8	4	6	9
9	6	5	9	8	5	7
0	5	4	1	3	9	8
8	3	3	4	9	8	7
4	0	0	7	0	7	8
<u>5</u>	<u>4</u>	<u>8</u>	<u>8</u>	<u>8</u>	<u>6</u>	<u>6</u>

Practice in Adding

Copy these examples. Add and check.

A	B	C	D	E	F	G
35	54	74	65	62	16	47
69	37	50	70	47	48	98
50	27	21	25	59	60	20
59	26	58	76	28	96	77
<u>36</u>	<u>12</u>	<u>13</u>	<u>40</u>	<u>44</u>	<u>32</u>	<u>56</u>

Practice in Addition

Copy the examples below and add. Check your work to make sure that you did it correctly.

In the first two rows, you will have to carry from ones' column to tens' column.

	A	B	C	D	E	F
1.	$\begin{array}{r} 346 \\ 536 \\ \hline \end{array}$	$\begin{array}{r} 319 \\ 174 \\ \hline \end{array}$	$\begin{array}{r} 156 \\ 28 \\ \hline \end{array}$	$\begin{array}{r} 464 \\ 306 \\ \hline \end{array}$	$\begin{array}{r} 323 \\ 67 \\ \hline \end{array}$	$\begin{array}{r} 638 \\ 47 \\ \hline \end{array}$
2.	$\begin{array}{r} 217 \\ 108 \\ \hline \end{array}$	$\begin{array}{r} 568 \\ 214 \\ \hline \end{array}$	$\begin{array}{r} 839 \\ 156 \\ \hline \end{array}$	$\begin{array}{r} 686 \\ 305 \\ \hline \end{array}$	$\begin{array}{r} 728 \\ 259 \\ \hline \end{array}$	$\begin{array}{r} 547 \\ 46 \\ \hline \end{array}$

Now you will carry from tens' column to hundreds' column.

3.	$\begin{array}{r} 563 \\ 373 \\ \hline \end{array}$	$\begin{array}{r} 496 \\ 160 \\ \hline \end{array}$	$\begin{array}{r} 694 \\ 75 \\ \hline \end{array}$	$\begin{array}{r} 873 \\ 64 \\ \hline \end{array}$	$\begin{array}{r} 356 \\ 281 \\ \hline \end{array}$	$\begin{array}{r} 773 \\ 42 \\ \hline \end{array}$
4.	$\begin{array}{r} 190 \\ 695 \\ \hline \end{array}$	$\begin{array}{r} 883 \\ 86 \\ \hline \end{array}$	$\begin{array}{r} 684 \\ 130 \\ \hline \end{array}$	$\begin{array}{r} 135 \\ 772 \\ \hline \end{array}$	$\begin{array}{r} 540 \\ 298 \\ \hline \end{array}$	$\begin{array}{r} 263 \\ 340 \\ \hline \end{array}$

Now remember to carry from both ones' and tens' columns.

5.	$\begin{array}{r} 195 \\ 347 \\ \hline \end{array}$	$\begin{array}{r} 734 \\ 79 \\ \hline \end{array}$	$\begin{array}{r} 489 \\ 552 \\ \hline \end{array}$	$\begin{array}{r} 958 \\ 96 \\ \hline \end{array}$	$\begin{array}{r} 709 \\ 498 \\ \hline \end{array}$	$\begin{array}{r} 583 \\ 439 \\ \hline \end{array}$
6.	$\begin{array}{r} 637 \\ 515 \\ 265 \\ \hline \end{array}$	$\begin{array}{r} 525 \\ 589 \\ 46 \\ \hline \end{array}$	$\begin{array}{r} 728 \\ 980 \\ 718 \\ \hline \end{array}$	$\begin{array}{r} 427 \\ 893 \\ 67 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ 79 \\ 52 \\ \hline \end{array}$	$\begin{array}{r} 285 \\ 489 \\ 218 \\ \hline \end{array}$
7.	$\begin{array}{r} 567 \\ 738 \\ 566 \\ 275 \\ \hline \end{array}$	$\begin{array}{r} 949 \\ 89 \\ 436 \\ 853 \\ \hline \end{array}$	$\begin{array}{r} 58 \\ 392 \\ 406 \\ 156 \\ \hline \end{array}$	$\begin{array}{r} 747 \\ 879 \\ 877 \\ 285 \\ \hline \end{array}$	$\begin{array}{r} 604 \\ 88 \\ 57 \\ 775 \\ \hline \end{array}$	$\begin{array}{r} 58 \\ 46 \\ 907 \\ 909 \\ \hline \end{array}$

Writing Dollars and Cents

The dollar sign (\$) is written before numbers that stand for money. We use a point to separate dollars from cents. There are always two places at the right of the point for cents. **\$4.75**

We may write seventy-five cents with the dollar sign and the point in this way: \$.75.

We may write eight dollars in this way: \$8.00.

The two zeros are written after the point to show that there are no cents with the eight dollars.

Six dollars and five cents is written this way: \$6.05. The zero at the left of the 5 shows that the 5 means 5 cents. Five cents is written: \$.05.

Write each of the amounts of money shown below. Use the dollar sign and point.

- | | |
|---------------------------------|----------------------------------|
| 1. Forty-nine cents | 5. Ten cents |
| 2. Ten dollars and twenty cents | 6. Three dollars and fifty cents |
| 3. Eight cents | 7. One dollar |
| 4. Two dollars and six cents | 8. Four dollars and six cents |

Adding Dollars and Cents

Copy the examples below. Be careful to keep dollars under dollars and cents under cents. Add and check.

	A	B	C	D	E
1.	$\begin{array}{r} \$24 \\ .43 \\ .31 \\ \hline \end{array}$	$\begin{array}{r} \$75 \\ .52 \\ .40 \\ \hline \end{array}$	$\begin{array}{r} \$80 \\ .70 \\ \hline \end{array}$	$\begin{array}{r} \$2.42 \\ 3.75 \\ \hline \end{array}$	$\begin{array}{r} \$4.94 \\ 1.96 \\ \hline \end{array}$
2.	$\begin{array}{r} \$2.70 \\ 1.90 \\ 8.48 \\ \hline \end{array}$	$\begin{array}{r} \$4.00 \\ 8.64 \\ 2.00 \\ \hline \end{array}$	$\begin{array}{r} \$8.50 \\ 3.65 \\ 6.35 \\ \hline \end{array}$	$\begin{array}{r} \$1.75 \\ 3.69 \\ 6.07 \\ \hline \end{array}$	$\begin{array}{r} \$3.49 \\ 4.49 \\ 4.10 \\ \hline \end{array}$

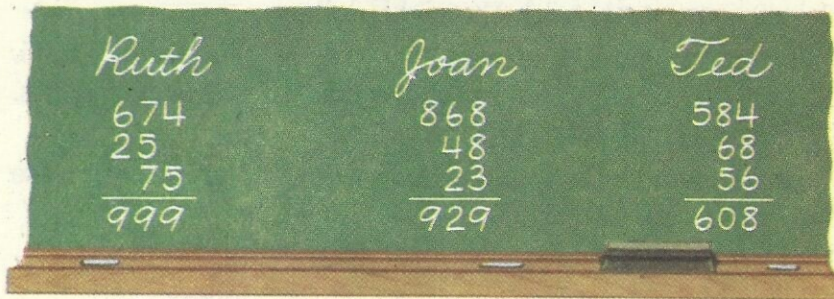
Things to Remember When Adding

Copy figures carefully. Keep them in straight columns, ones under ones, tens under tens, and so on.

Remember the carried figure. Add the carried figure to the first figure of the next column. Do not write it.

Add down. Check your work by adding up. Add again, if the sums are not the same.

Find what is wrong in each of the examples below:



Did Ruth, Joan, and Ted check their work? Write the examples correctly and add.

Copy the following examples. Add and check.

	A	B	C	D	E
1.	\$.03 .05 .01 —	\$.33 .72 6.83 —	\$4.07 .77 .04 —	\$9.94 .09 .37 —	\$17.23 13.48 66.80 —
2.	\$35.68 25.00 8.38 —	\$8.46 2.71 5.05 1.91 —	\$6.70 .29 5.42 .60 —	\$.83 .59 .50 .38 .20 —	\$.06 .38 .25 .63 .45 —

Making Sure of Addition

The examples on this page and the next are a test to see how well you can add. They include the kinds of examples you have had before.

Copy the examples and add. Check your work.

If you make mistakes, turn to the pages listed at the right of the rows. There you will find examples like the ones you missed. Study those examples again.

Set I

	A	B	C	D	E	F	
1.	<u>43</u> <u>47</u>	<u>39</u> <u>26</u>	<u>27</u> <u>84</u>	<u>86</u> <u>19</u>	<u>64</u> <u>58</u>	<u>48</u> <u>52</u>	15
2.	<u>97</u> <u>13</u> <u>70</u>	<u>9</u> <u>48</u> <u>66</u>	<u>12</u> <u>69</u> <u>63</u> <u>12</u>	<u>78</u> <u>98</u> <u>40</u> <u>4</u>	<u>4</u> <u>9</u> <u>87</u> <u>22</u>	<u>49</u> <u>23</u> <u>84</u> <u>53</u>	16
3.	<u>6</u> <u>8</u> <u>6</u> <u>0</u> <u>6</u> <u>2</u>	<u>9</u> <u>7</u> <u>5</u> <u>4</u> <u>5</u> <u>3</u>	<u>4</u> <u>6</u> <u>6</u> <u>2</u> <u>0</u> <u>9</u>	<u>37</u> <u>67</u> <u>20</u> <u>53</u> <u>24</u>	<u>59</u> <u>95</u> <u>17</u> <u>55</u> <u>71</u>	<u>48</u> <u>27</u> <u>42</u> <u>67</u> <u>66</u>	17
4.	<u>428</u> <u>569</u>	<u>605</u> <u>38</u>	<u>564</u> <u>274</u>	<u>655</u> <u>93</u>	<u>63</u> <u>740</u>	<u>534</u> <u>393</u>	18 Rows 1, 2, 3, 4

Making Sure of Addition

Set II

	A	B	C	D	E	F	
1.	697 <u>176</u>	86 <u>228</u>	373 128 <u>440</u>	296 39 <u>783</u>	726 905 76 <u>352</u>	898 508 416 <u>32</u>	18 Rows 5, 6, 7
2.	\$5.85 <u>4.49</u>	\$6.38 <u>9.75</u>	\$.49 .37 <u>.27</u>	\$.75 .47 <u>.95</u>	\$5.00 7.83 2.35 <u>2.35</u>	\$1.75 6.38 6.44	19
3.	\$6.40 .53 <u>.09</u>	\$.04 .06 <u>.08</u>	\$18.49 9.78 <u>2.80</u>	\$3.87 6.90 8.53 <u>8.53</u>	\$7.94 .52 1.86 <u>.60</u>	\$.03 .38 .29 <u>.63</u> <u>.43</u>	20

KEEPING ON YOUR TOES

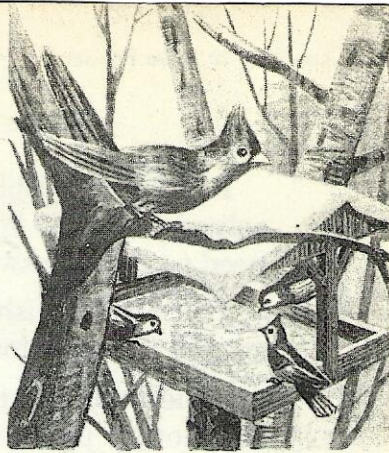
Read the questions and write the answers:

1. Look at the number 860. How many hundreds, tens, and ones are there in this number?
2. Look at the number 8,469. What does the 8 mean? the 4? the 6? the 9?
3. In the number 700, what do the two zeros show?
4. In which of the following numbers does the 3 have the same value?

57,300
703
359
5637
5. If you should leave the zero out of 6038, what would the number be?

Cub Scouts

Read each problem carefully. Find the answer to the question asked. Check your work by adding again.



1. Bob belongs to a Cub Scout Pack. In his Den there are 7 boys. In another Den there are 9, in another 5, and in another 10. How many boys are in the Pack?
2. To join the Cub Scouts, Bob paid a fee of 50 cents. He bought a Cub Scout neckerchief for 45 cents and a slide for 10 cents. How much did he spend in all?
3. The Pack bought two books about birds. One of them cost \$1.27 and the other \$2.98. How much did both books cost?
4. Bob's Den decided to build a winter feeding station for the birds. They bought wood for \$2.45, nails for 8 cents, and paint for 55 cents. They paid \$1.75 for feed for the birds. How much did they spend in all?
5. One week the boys saw 56 birds at the feeding station. The next week they counted 108 birds and the next, 124. How many birds did they see in the three weeks?
6. In Bob's town, there are 181 Cub Scouts, 321 Boy Scouts, and 103 Explorer Scouts. How many boys are in Scouting there?
7. The Cub Scouts put up posters for the March-of-Dimes Fund. One year \$8,600 was raised. The next year \$598 more was raised. How much was raised that year?
8. In a waste paper drive Bob's Pack collected 1,255 pounds. Another Pack collected 968 pounds and another, 1,047 pounds. How many pounds did the three Packs collect?

What Does the Question Ask?

Read each problem thoughtfully. Before you begin to solve it, think, "What does the question ask? What do I need to do to answer it?"

When you finish a problem, ask yourself, "Have I answered the question which is asked in the problem?"

1. The pupils in three classes went to the auditorium to see motion pictures of our parks. There were 29 pupils in one class, 39 in another, and 35 in the third. How many pupils saw the pictures?
2. The science club kept a weather record. They recorded 40 clear days, 13 cloudy days, 26 partly cloudy days, and 8 days on which it rained or snowed. For how many days had they kept a record?
3. One day in the school cafeteria, the children bought 248 bottles of milk and 177 bottles of chocolate milk. How many bottles did they buy that day?
4. The school library had 7,294 books. During Book Week, 97 new books were added. How many books did the library have then?
5. Central School bought a slide for the playground that cost \$182.00 and a flagpole that cost \$83.75. How much did the school pay for both?
6. In Ridge School the sale of tickets for a magician's show brought \$32.65 and the sale of cookies, \$9.60. How much did the school receive altogether?





When Do We Subtract?

Paul wanted a new bicycle that cost \$48.50. He had saved \$44.00. How much more money did he need? He saw another bicycle that cost \$42.00. If he bought that bicycle, how much money would he have left?

What is the difference in price between the two bicycles?

Paul subtracted to find **how much more** money he must save before he could buy the more expensive bicycle. How much more does he need?

He subtracted to find **how much** money he would have **left** if he bought the cheaper bicycle. How much money would he have left?

He also subtracted to find the **difference** in price between the 2 bicycles. What is the difference?

► We subtract when we want to find the answer to any one of the following questions:

1. How many more, or how much more, will be needed?
2. How many, or how much, will be left?
3. How many fewer, or how much less, will there be?
4. What is the difference?

► To show that a smaller number is to be subtracted from a larger number we sometimes use the minus sign ($-$). For example, $12 - 3$ means that 3 is to be subtracted from 12; $12 - 3 = 9$.

In subtraction the answer is called the **difference**, or the **remainder**.

Do You Know the Subtraction Facts?

Here is a review test on the subtraction facts. Write the remainders on folded paper placed below each row of examples. Check your work. Learn the answers for any examples you do not know.

	A	B	C	D	E	F	G	H	I
1.	$\begin{array}{r} 6 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 3 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 5 \\ \hline \end{array}$
2.	$\begin{array}{r} 10 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 2 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 2 \\ \hline \end{array}$
3.	$\begin{array}{r} 14 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 9 \\ \hline \end{array}$
4.	$\begin{array}{r} 9 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 4 \\ \hline \end{array}$
5.	$\begin{array}{r} 11 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 8 \\ \hline \end{array}$
6.	$\begin{array}{r} 11 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 4 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 4 \\ \hline \end{array}$
7.	$\begin{array}{r} 3 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 2 \\ \hline \end{array}$
8.	$\begin{array}{r} 15 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 6 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 4 \\ \hline \end{array}$
9.	$\begin{array}{r} 9 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 5 \\ 1 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 9 \\ \hline \end{array}$

How Do We Subtract?

When we subtract:

1. We write the smaller number under the larger number.
2. We write ones under ones, tens under tens, and so on.
3. We begin at the right, subtracting the ones first, then the tens, and then the hundreds.

► When a number is subtracted from another number just like it, there is nothing left. The remainder is zero.

Using the Subtraction Facts in Examples

Look at these examples and say the remainders:

	A	B	C	D	E	F	G
1.	$\begin{array}{r} 19 \\ - 6 \\ \hline \end{array}$	$\begin{array}{r} 21 \\ - 1 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 45 \\ - 5 \\ \hline \end{array}$	$\begin{array}{r} 49 \\ - 2 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 27 \\ - 7 \\ \hline \end{array}$
2.	$\begin{array}{r} 28 \\ - 5 \\ \hline \end{array}$	$\begin{array}{r} 29 \\ - 3 \\ \hline \end{array}$	$\begin{array}{r} 28 \\ - 6 \\ \hline \end{array}$	$\begin{array}{r} 26 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 39 \\ - 5 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ - 4 \\ \hline \end{array}$	$\begin{array}{r} 27 \\ - 2 \\ \hline \end{array}$

Copy these examples. Subtract, and write the remainders.

	A	B	C	D	E	F
3.	$\begin{array}{r} 78 \\ - 37 \\ \hline \end{array}$	$\begin{array}{r} 96 \\ - 16 \\ \hline \end{array}$	$\begin{array}{r} 247 \\ - 125 \\ \hline \end{array}$	$\begin{array}{r} 598 \\ - 172 \\ \hline \end{array}$	$\begin{array}{r} 587 \\ - 446 \\ \hline \end{array}$	$\begin{array}{r} 569 \\ - 328 \\ \hline \end{array}$
4.	$\begin{array}{r} 586 \\ - 265 \\ \hline \end{array}$	$\begin{array}{r} 966 \\ - 431 \\ \hline \end{array}$	$\begin{array}{r} 349 \\ - 336 \\ \hline \end{array}$	$\begin{array}{r} 788 \\ - 85 \\ \hline \end{array}$	$\begin{array}{r} 892 \\ - 52 \\ \hline \end{array}$	$\begin{array}{r} 437 \\ - 21 \\ \hline \end{array}$
5.	$\begin{array}{r} 158 \\ - 61 \\ \hline \end{array}$	$\begin{array}{r} 129 \\ - 84 \\ \hline \end{array}$	$\begin{array}{r} 113 \\ - 51 \\ \hline \end{array}$	$\begin{array}{r} 169 \\ - 97 \\ \hline \end{array}$	$\begin{array}{r} 148 \\ - 73 \\ \hline \end{array}$	$\begin{array}{r} 134 \\ - 41 \\ \hline \end{array}$

When and How to Borrow

Jerry has 456 pages of *Robin Hood* to read. He has read 227 pages. He wants to find how many pages he has yet to read.

Jerry knew he would have to subtract 227 from 456. He saw that he had to borrow because he could not subtract 7 ones from 6 ones. He had to use one of the 5 tens. One ten is 10 ones; 10 ones and 6 ones make 16 ones. He could subtract 7 ones from 16 ones. He wrote 9 in ones' place.

$$\begin{array}{r} 456 \\ -227 \\ \hline 229 \end{array}$$

Jerry remembered that since he had used 1 ten there were only 4 tens left; 2 tens from 4 tens leaves 2 tens. He wrote 2 in tens' place.

Two hundreds from 4 hundreds leaves 2 hundreds. Jerry wrote 2 in hundreds' place. He found he had 229 pages to read.

In subtraction, we always have to borrow when the figure above is smaller than the figure below it.

Checking Subtraction

This example shows how to check subtraction. Add the remainder to the number that was subtracted. If the work is correct, the sum of these two numbers will be the same as the top number of the example.

$$\begin{array}{r} 456 \\ -227 \text{ number subtracted} \\ \hline 229 \text{ remainder} \\ +229 \\ \hline 456 \end{array}$$

Copy the examples below. Subtract and check.

A	B	C	D	E	F
442	795	957	194	482	881
<u>136</u>	<u>158</u>	<u>439</u>	<u>26</u>	<u>233</u>	<u>167</u>

Borrowing from Hundreds' Place

In the example at the right, the zero in 290 shows that there are no ones to subtract. We write 7 in the remainder. We cannot subtract 9 tens from 4 tens. We use one of the 7 hundreds, changing it to 10 tens. We now have 14 tens; 9 from 14 leaves 5. We write 5 in tens' place. Since we have used 1 of the hundreds, there are only 6 left; 2 from 6 leaves 4.

$$\begin{array}{r} 747 \\ 290 \\ \hline 457 \end{array}$$

Copy, subtract, and check. In the first example there are no ones to subtract. Write 0 in the remainder.

	A	B	C	D	E	F
1.	$\begin{array}{r} 830 \\ 370 \\ \hline \end{array}$	$\begin{array}{r} 527 \\ 365 \\ \hline \end{array}$	$\begin{array}{r} 495 \\ 290 \\ \hline \end{array}$	$\begin{array}{r} 618 \\ 184 \\ \hline \end{array}$	$\begin{array}{r} 840 \\ 650 \\ \hline \end{array}$	$\begin{array}{r} 652 \\ 570 \\ \hline \end{array}$
2.	$\begin{array}{r} 617 \\ 437 \\ \hline \end{array}$	$\begin{array}{r} 739 \\ 160 \\ \hline \end{array}$	$\begin{array}{r} 973 \\ 781 \\ \hline \end{array}$	$\begin{array}{r} 819 \\ 278 \\ \hline \end{array}$	$\begin{array}{r} 618 \\ 250 \\ \hline \end{array}$	$\begin{array}{r} 959 \\ 383 \\ \hline \end{array}$

In Rows 3 and 4, you will have to borrow from tens' place, or hundreds' place, or both.

3.	$\begin{array}{r} 519 \\ 196 \\ \hline \end{array}$	$\begin{array}{r} 775 \\ 156 \\ \hline \end{array}$	$\begin{array}{r} 326 \\ 170 \\ \hline \end{array}$	$\begin{array}{r} 653 \\ 144 \\ \hline \end{array}$	$\begin{array}{r} 2936 \\ 2148 \\ \hline \end{array}$	$\begin{array}{r} 4951 \\ 2564 \\ \hline \end{array}$
4.	$\begin{array}{r} 985 \\ 429 \\ \hline \end{array}$	$\begin{array}{r} 920 \\ 630 \\ \hline \end{array}$	$\begin{array}{r} 5131 \\ 2096 \\ \hline \end{array}$	$\begin{array}{r} 8884 \\ 3498 \\ \hline \end{array}$	$\begin{array}{r} 9736 \\ 5487 \\ \hline \end{array}$	$\begin{array}{r} 5973 \\ 3295 \\ \hline \end{array}$

► As you have seen, you often have to borrow from tens' place and from hundreds' place. You may need to borrow from any place except ones' place.

Zeros in Subtraction

1. In this example we find a zero in the top number. We can subtract 5 ones from 7 ones, but we cannot subtract 6 tens from no tens. We must use one of the 5 hundreds in hundreds' place. One hundred is 10 tens; 6 tens from 10 tens leaves 4 tens. Write 4 in tens' place in the remainder. Subtract the 2 hundreds from the 4 hundreds left after using one of the hundreds.

$$\begin{array}{r} 507 \\ -265 \\ \hline 242 \end{array}$$

2. Here we cannot subtract in ones' place until we use the 1 ten. That leaves a zero in tens' place. We use one of the hundreds and subtract just as we did above.

$$\begin{array}{r} 517 \\ -268 \\ \hline 249 \end{array}$$

3. Now we find two zeros in the top number. We cannot take 3 ones from no ones. In this example there are no tens, so we use one of the 6 hundreds, and change the 1 hundred to 10 tens. Now we change one of the tens to 10 ones. Three from 10 is 7. Since we have used one of the 10 tens, there are only 9 tens left. Two from 9 is 7. Then subtract the hundreds. Remember we have used one of the hundreds.

$$\begin{array}{r} 600 \\ -123 \\ \hline 477 \end{array}$$

We do not always need to think through all the steps given above. We can think, 3 from 10 is 7, 2 from 9 is 7, and 1 from 5 is 4.

4. In this example we borrow one of the 6 tens in order to subtract the ones. There is nothing to subtract from the 5 tens that are left, so we write 5 in the remainder. Then we subtract the hundreds.

$$\begin{array}{r} 762 \\ -407 \\ \hline 355 \end{array}$$

5. Copy the four examples given on this page. Subtract. Then compare your work with the work in the book.

Practice in Subtracting

Copy, subtract, and check:

	A	B	C	D	E	F
1.	$\begin{array}{r} 806 \\ 392 \\ \hline \end{array}$	$\begin{array}{r} 701 \\ 258 \\ \hline \end{array}$	$\begin{array}{r} 511 \\ 375 \\ \hline \end{array}$	$\begin{array}{r} 409 \\ 238 \\ \hline \end{array}$	$\begin{array}{r} 916 \\ 687 \\ \hline \end{array}$	$\begin{array}{r} 601 \\ 324 \\ \hline \end{array}$
2.	$\begin{array}{r} 900 \\ 371 \\ \hline \end{array}$	$\begin{array}{r} 500 \\ 106 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ 452 \\ \hline \end{array}$	$\begin{array}{r} 700 \\ 414 \\ \hline \end{array}$	$\begin{array}{r} 900 \\ 563 \\ \hline \end{array}$	$\begin{array}{r} 500 \\ 233 \\ \hline \end{array}$
3.	$\begin{array}{r} 1784 \\ 1208 \\ \hline \end{array}$	$\begin{array}{r} 6843 \\ 5407 \\ \hline \end{array}$	$\begin{array}{r} 9676 \\ 2309 \\ \hline \end{array}$	$\begin{array}{r} 5856 \\ 4208 \\ \hline \end{array}$	$\begin{array}{r} 8732 \\ 1505 \\ \hline \end{array}$	$\begin{array}{r} 7425 \\ 6207 \\ \hline \end{array}$

Borrowing Three Times

In this example we cannot subtract 8 from 7, so we use one of the 3 tens; 8 from 17 leaves 9.

$$\begin{array}{r} 3537 \\ 1648 \\ \hline 1889 \end{array}$$

We cannot subtract 4 tens from the 2 tens we have left, so we use one of the 5 hundreds. Four tens from 12 tens leaves 8 tens.

We used one of the 5 hundreds. Since we cannot subtract 6 from 4, we use one of the 3 thousands. This is 10 hundreds. Then 6 hundreds from 14 hundreds leaves 8 hundreds.

Remember that we used one of the 3 thousands. Subtract 1 from 2; 1 is left.

Copy, subtract, and check:

A	B	C	D	E	F
$\begin{array}{r} 4233 \\ 1264 \\ \hline \end{array}$	$\begin{array}{r} 8541 \\ 5967 \\ \hline \end{array}$	$\begin{array}{r} 6353 \\ 4379 \\ \hline \end{array}$	$\begin{array}{r} 7438 \\ 6879 \\ \hline \end{array}$	$\begin{array}{r} 9824 \\ 7865 \\ \hline \end{array}$	$\begin{array}{r} 4130 \\ 2148 \\ \hline \end{array}$

Subtracting Dollars and Cents

Copy these examples carefully, keeping dollars under dollars and cents under cents. Remember to place the points where they belong.

Subtract and check. Place the point and the dollar sign in each remainder.

	A	B	C	D	E	F
1.	\$ <u>.85</u> <u>.08</u>	\$ <u>7.12</u> <u>.37</u>	\$ <u>8.35</u> <u>4.90</u>	\$ <u>6.00</u> <u>5.49</u>	\$ <u>5.34</u> <u>2.86</u>	\$ <u>8.05</u> <u>2.96</u>
2.	\$ <u>63.25</u> <u>44.29</u>	\$ <u>29.53</u> <u>8.75</u>	\$ <u>12.82</u> <u>6.93</u>	\$ <u>92.53</u> <u>15.98</u>	\$ <u>34.22</u> <u>16.79</u>	\$ <u>82.83</u> <u>63.84</u>

Things to Remember When Subtracting

Borrow when the figure in the bottom number is larger than the figure above it. Remember that the figure from which you borrowed is one less than it was before.

Check your work.

<i>Stuart</i>	<i>Grace</i>	<i>Frank</i>
$\begin{array}{r} 132 \\ 95 \\ \hline 163 \end{array}$	$\begin{array}{r} 294 \\ 56 \\ \hline 248 \end{array}$	$\begin{array}{r} 601 \\ 468 \\ \hline 143 \end{array}$

Find what is wrong in each of the examples above. Then write each example and subtract correctly.

KEEPING ON YOUR TOES

- Does $17 + 23 = 23 + 17$?
- Tell what the difference between 90 and 73 is. What is $130 - 85$? What is 368 minus 348?

Making Sure of Subtraction

This page of examples will help you find out how well you can subtract. They are the kinds of examples you have had before.

Write the remainders on folded paper placed below each row. Check each example before leaving it.

If you make mistakes, turn to the pages given at the ends of the rows, and study those examples again.

Set I

	A	B	C	D	E	F	
1.	$\begin{array}{r} 57 \\ 2 \end{array}$	$\begin{array}{r} 48 \\ 8 \end{array}$	$\begin{array}{r} 85 \\ 63 \end{array}$	$\begin{array}{r} 98 \\ 75 \end{array}$	$\begin{array}{r} 47 \\ 14 \end{array}$	$\begin{array}{r} 39 \\ 33 \end{array}$	27, Rows 1, 2
2.	$\begin{array}{r} 894 \\ 223 \end{array}$	$\begin{array}{r} 957 \\ 825 \end{array}$	$\begin{array}{r} 488 \\ 431 \end{array}$	$\begin{array}{r} 968 \\ 534 \end{array}$	$\begin{array}{r} 826 \\ 26 \end{array}$	$\begin{array}{r} 767 \\ 43 \end{array}$	27, Rows 3, 4, 5

Set II

1.	$\begin{array}{r} 961 \\ 452 \end{array}$	$\begin{array}{r} 580 \\ 259 \end{array}$	$\begin{array}{r} 671 \\ 318 \end{array}$	$\begin{array}{r} 864 \\ 716 \end{array}$	$\begin{array}{r} 977 \\ 958 \end{array}$	$\begin{array}{r} 183 \\ 174 \end{array}$	28
2.	$\begin{array}{r} 620 \\ 470 \end{array}$	$\begin{array}{r} 849 \\ 685 \end{array}$	$\begin{array}{r} 324 \\ 290 \end{array}$	$\begin{array}{r} 913 \\ 692 \end{array}$	$\begin{array}{r} 528 \\ 240 \end{array}$	$\begin{array}{r} 719 \\ 267 \end{array}$	29, Rows 1, 2

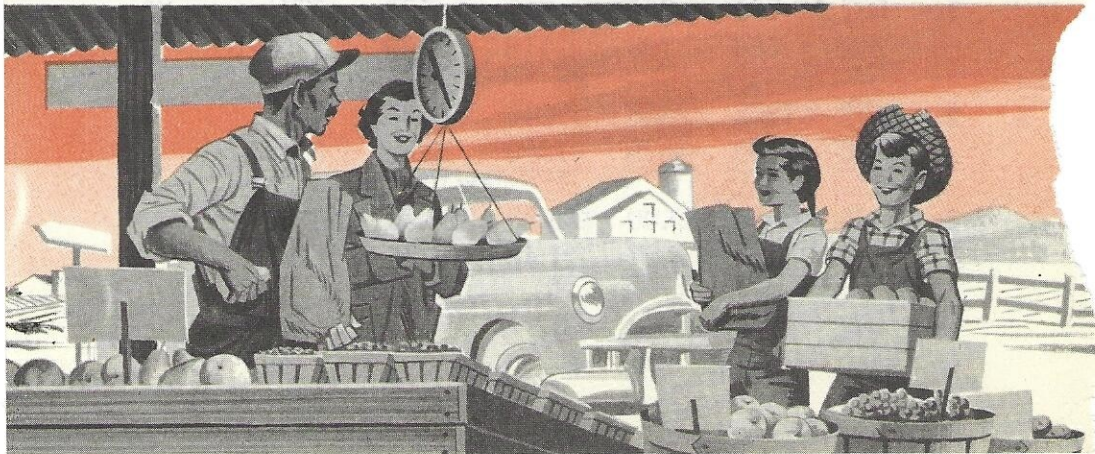
Set III

1.	$\begin{array}{r} 507 \\ 242 \end{array}$	$\begin{array}{r} 705 \\ 566 \end{array}$	$\begin{array}{r} 900 \\ 783 \end{array}$	$\begin{array}{r} 500 \\ 116 \end{array}$	$\begin{array}{r} 587 \\ 409 \end{array}$	$\begin{array}{r} 6774 \\ 1309 \end{array}$	29 Rows 3, 4 30
2.	$\begin{array}{r} 9422 \\ 5976 \end{array}$	$\begin{array}{r} 7262 \\ 2495 \end{array}$	$\begin{array}{r} 8458 \\ 4579 \end{array}$	$\begin{array}{r} 7246 \\ 1589 \end{array}$	$\begin{array}{r} 9764 \\ 3785 \end{array}$	$\begin{array}{r} 6212 \\ 3313 \end{array}$	31
3.	$\begin{array}{r} \$.65 \\ .07 \end{array}$	$\begin{array}{r} \$4.03 \\ 1.66 \end{array}$	$\begin{array}{r} \$9.00 \\ 3.27 \end{array}$	$\begin{array}{r} \$28.00 \\ 11.48 \end{array}$	$\begin{array}{r} \$26.40 \\ 5.75 \end{array}$	$\begin{array}{r} \$91.36 \\ 22.88 \end{array}$	32

Using Subtraction in Problems

Read the problems below carefully. Think what each question asks and then find the answer to the question. Check each answer.

1. One morning John and his father planted 144 strawberry plants. John planted 48 of the plants. How many did his father plant?
2. John and his sister sold strawberries. In one week John received \$10.62 from the sale of strawberries, and Judy received \$7.08. Judy received how much less than John?
3. That year 800 blueberry bushes were planted on their farm. Thirty-six of the bushes did not grow. How many bushes were left?
4. Mr. Carter sold 1,200 baskets of peaches and 650 baskets of pears. He sold how many more baskets of peaches than pears?
5. He sold 1,728 baskets of grapes and shipped 1,060 baskets to city markets. The rest were sold in local markets. How many were sold in local markets?
6. That year Mr. Carter received \$99.00 from the sale of red raspberries, and \$80.85 from the sale of black raspberries. What was the difference in the amounts received for the two kinds of raspberries?



Keeping in Practice

Set I

Copy the examples below and add. Check your work.

	A	B	C	D	E
1.	$\begin{array}{r} 19 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 28 \\ 34 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ 27 \\ \hline \end{array}$	$\begin{array}{r} 430 \\ 85 \\ \hline \end{array}$	$\begin{array}{r} 708 \\ 39 \\ \hline \end{array}$
2.	$\begin{array}{r} 658 \\ 246 \\ 54 \\ \hline \end{array}$	$\begin{array}{r} 89 \\ 207 \\ 746 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ 358 \\ 615 \\ \hline \end{array}$	$\begin{array}{r} 760 \\ 83 \\ 39 \\ \hline \end{array}$	$\begin{array}{r} 925 \\ 779 \\ 500 \\ \hline \end{array}$
3.	$\begin{array}{r} \$0.8 \\ .27 \\ .51 \\ .05 \\ \hline \end{array}$	$\begin{array}{r} \$3.85 \\ 1.80 \\ 3.98 \\ 4.00 \\ \hline \end{array}$	$\begin{array}{r} \$7.40 \\ .36 \\ 3.86 \\ .75 \\ \hline \end{array}$	$\begin{array}{r} \$69.37 \\ 26.85 \\ 84.00 \\ \hline \end{array}$	$\begin{array}{r} \$58.16 \\ 9.09 \\ 33.90 \\ \hline \end{array}$

Set II

Copy the examples below and subtract. Check your work.

1.	$\begin{array}{r} 82 \\ 49 \\ \hline \end{array}$	$\begin{array}{r} 46 \\ 27 \\ \hline \end{array}$	$\begin{array}{r} 535 \\ 208 \\ \hline \end{array}$	$\begin{array}{r} 872 \\ 353 \\ \hline \end{array}$	$\begin{array}{r} 194 \\ 86 \\ \hline \end{array}$
2.	$\begin{array}{r} \$5.27 \\ 2.50 \\ \hline \end{array}$	$\begin{array}{r} \$7.08 \\ 3.12 \\ \hline \end{array}$	$\begin{array}{r} \$9.50 \\ 4.97 \\ \hline \end{array}$	$\begin{array}{r} \$7.28 \\ 1.89 \\ \hline \end{array}$	$\begin{array}{r} \$8.00 \\ 2.62 \\ \hline \end{array}$
3.	$\begin{array}{r} \$27.00 \\ 9.50 \\ \hline \end{array}$	$\begin{array}{r} \$15.72 \\ 7.86 \\ \hline \end{array}$	$\begin{array}{r} \$45.72 \\ 16.64 \\ \hline \end{array}$	$\begin{array}{r} \$24.04 \\ 15.08 \\ \hline \end{array}$	$\begin{array}{r} \$85.10 \\ 35.48 \\ \hline \end{array}$
4.	$\begin{array}{r} \$71.61 \\ 43.96 \\ \hline \end{array}$	$\begin{array}{r} \$62.40 \\ 13.86 \\ \hline \end{array}$	$\begin{array}{r} \$73.47 \\ 27.48 \\ \hline \end{array}$	$\begin{array}{r} \$53.81 \\ 38.94 \\ \hline \end{array}$	$\begin{array}{r} \$94.25 \\ 56.97 \\ \hline \end{array}$

Deciding What to Do

Do not write any numbers on your paper until you have read the problem through carefully. Think about the problem before you decide whether to add or subtract. Then go on solving the problem. Check each answer.

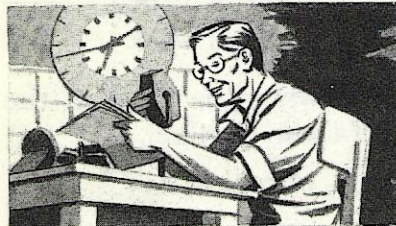
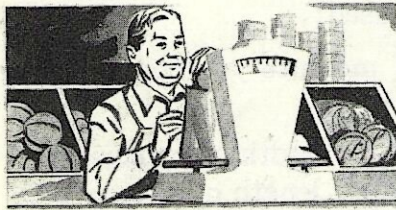
1. David's father took moving pictures on a trip through the West. He visited three national parks, and used 250 feet, 300 feet, and 325 feet of film. How many feet of film did he use altogether?
2. He used 1200 feet of film during the entire trip. Three hundred fifty feet of this was color film. How many feet of black and white film did he use?
3. The projector used to show the films cost \$59.50. The screen cost \$18.50. What was the total cost of the two?
4. David's camera cost \$5.95. His father's movie camera cost \$99.50. What was the difference in the cost of the two cameras?
5. David's older brother paid \$3.75 for twenty-five feet of color film, and \$6.75 for a fifty-foot roll. How much did he pay in all?
6. David paid \$3.40 for slides which were made from pictures he took on a trip. He paid for them with a five-dollar bill. How much money did he get back?



When Do We Measure?

The people in the pictures below use measures in their work. Mark off four spaces on your paper, and in the first space list all of the measures the grocer in the first picture might use. Do the same for each of the others. Perhaps several of the people will use the same measures.

You will find the names of the measures and their abbreviations at the bottom of the page.



UNITS OF MEASURE

inch (in.)	day (da.)	cup (c.)
foot (ft.)	week (wk.)	pint (pt.)
yard (yd.)	month (mo.)	quart (qt.)
mile (mi.)	year (yr.)	gallon (gal.)
second (sec.)	ounce (oz.)	peck (pk.)
minute (min.)	pound (lb.)	bushel (bu.)
hour (hr.)	ton (T.)	dozen (doz.)

► The same abbreviation is used to stand for one or more than one. For example, **yd.** is the correct abbreviation for both **yard** and **yards**.

Make a list of measures you use.

Measures for Different Things

You have learned that different things are measured in different ways. The unit of measure we use depends upon what we want to measure. A **unit** is one of any kind; as, one minute, one hour, one foot, or one quart.

We say that Tom is nearly 5 feet tall. In this case the unit of measure is the foot. Mary is 10 years old; here, the year is the unit of measure. A bottle holds 1 pint of milk; what unit of measure is used?

Tell what unit, or units, of measure you could use to measure the following:

Lucy's age	a school year	width of a magazine
ribbon	coal	length of a room
cream	gasoline	Stuart's weight
bananas	milk	a school week

Write the numbers 1-12. Then write the name of the measure that should go in each of these blanks:

1. Every child should drink 1 ? of milk a day.
2. We bought 2 ? rolls for the picnic.
3. October is the tenth ? of the year.
4. Mrs. Haines bought 2 ? of chopped steak.
5. Anne's uncle is more than 6 ? tall.
6. George is 11 ? old.
7. Mr. Flint ordered 3 ? of coal.
8. We had to wait 15 ? for a bus.
9. The distance between Boston and New York is 229 ? .
10. Marie's new pencil is 7 ? long.
11. Last winter Mrs. Jones spent 8 ? in Arizona.
12. Joan bought 3 ? of gingham for a dress.



When Do We Multiply?

A group of children in Summer Avenue School have charge of the school store. They sell supplies to the other children in the school.

One day Mary bought a drawing pencil for 10¢ , a tablet for 7¢ , and an eraser for 5¢ .

Mary needed to find the **total amount** in order to know how much she would have to pay. She added 10¢ , 7¢ , and 5¢ , and gave 22¢ to Ruth, who was selling the supplies.

Fred bought three 7¢ -tablets at the school store. He had to find the total amount. He could have added 7¢ , 7¢ , and 7¢ , but he knew it would save time to multiply. He thought, "three 7's are 21." He handed Ruth 21 cents.

We can add or multiply to find the total amount. When we have to find the total of several numbers that are just alike, it is quicker to multiply than to add.

Should you add or multiply?

1. Five pencils at 5¢ each cost $\underline{\quad ? \quad}$.
2. One eraser at 5¢ and one pen at 15¢ cost $\underline{\quad ? \quad}$.
3. Four boxes of crayons at 15¢ cost $\underline{\quad ? \quad}$.
4. One pencil at 5¢ and 1 tablet at 7¢ cost $\underline{\quad ? \quad}$.

Do You Know the Multiplication Facts?

Multiplication is a "time-saver," but it does not save time unless you do accurate work. Write the products on folded paper. Check your work. Learn the answers for any examples you do not know. Repeat the exercise until you make a perfect score.

	A	B	C	D	E	F	G	H
1.	$\begin{array}{r} 8 \\ 6 \end{array}$	$\begin{array}{r} 7 \\ 3 \end{array}$	$\begin{array}{r} 9 \\ 4 \end{array}$	$\begin{array}{r} 6 \\ 2 \end{array}$	$\begin{array}{r} 9 \\ 9 \end{array}$	$\begin{array}{r} 5 \\ 4 \end{array}$	$\begin{array}{r} 4 \\ 2 \end{array}$	$\begin{array}{r} 7 \\ 8 \end{array}$
2.	$\begin{array}{r} 3 \\ 3 \end{array}$	$\begin{array}{r} 5 \\ 5 \end{array}$	$\begin{array}{r} 4 \\ 6 \end{array}$	$\begin{array}{r} 2 \\ 3 \end{array}$	$\begin{array}{r} 8 \\ 7 \end{array}$	$\begin{array}{r} 6 \\ 5 \end{array}$	$\begin{array}{r} 8 \\ 4 \end{array}$	$\begin{array}{r} 5 \\ 2 \end{array}$
3.	$\begin{array}{r} 2 \\ 8 \end{array}$	$\begin{array}{r} 7 \\ 9 \end{array}$	$\begin{array}{r} 3 \\ 5 \end{array}$	$\begin{array}{r} 2 \\ 6 \end{array}$	$\begin{array}{r} 6 \\ 4 \end{array}$	$\begin{array}{r} 5 \\ 3 \end{array}$	$\begin{array}{r} 9 \\ 5 \end{array}$	$\begin{array}{r} 8 \\ 8 \end{array}$
4.	$\begin{array}{r} 5 \\ 6 \end{array}$	$\begin{array}{r} 3 \\ 8 \end{array}$	$\begin{array}{r} 7 \\ 2 \end{array}$	$\begin{array}{r} 2 \\ 5 \end{array}$	$\begin{array}{r} 4 \\ 8 \end{array}$	$\begin{array}{r} 6 \\ 7 \end{array}$	$\begin{array}{r} 2 \\ 4 \end{array}$	$\begin{array}{r} 5 \\ 9 \end{array}$
5.	$\begin{array}{r} 3 \\ 4 \end{array}$	$\begin{array}{r} 7 \\ 7 \end{array}$	$\begin{array}{r} 7 \\ 5 \end{array}$	$\begin{array}{r} 9 \\ 3 \end{array}$	$\begin{array}{r} 3 \\ 2 \end{array}$	$\begin{array}{r} 2 \\ 9 \end{array}$	$\begin{array}{r} 6 \\ 3 \end{array}$	$\begin{array}{r} 2 \\ 2 \end{array}$
6.	$\begin{array}{r} 7 \\ 6 \end{array}$	$\begin{array}{r} 4 \\ 5 \end{array}$	$\begin{array}{r} 8 \\ 9 \end{array}$	$\begin{array}{r} 3 \\ 9 \end{array}$	$\begin{array}{r} 2 \\ 7 \end{array}$	$\begin{array}{r} 3 \\ 6 \end{array}$	$\begin{array}{r} 4 \\ 4 \end{array}$	$\begin{array}{r} 4 \\ 9 \end{array}$
7.	$\begin{array}{r} 3 \\ 7 \end{array}$	$\begin{array}{r} 5 \\ 8 \end{array}$	$\begin{array}{r} 9 \\ 6 \end{array}$	$\begin{array}{r} 5 \\ 7 \end{array}$	$\begin{array}{r} 8 \\ 2 \end{array}$	$\begin{array}{r} 7 \\ 4 \end{array}$	$\begin{array}{r} 6 \\ 6 \end{array}$	$\begin{array}{r} 9 \\ 8 \end{array}$
8.	$\begin{array}{r} 4 \\ 3 \end{array}$	$\begin{array}{r} 8 \\ 3 \end{array}$	$\begin{array}{r} 9 \\ 2 \end{array}$	$\begin{array}{r} 4 \\ 7 \end{array}$	$\begin{array}{r} 6 \\ 9 \end{array}$	$\begin{array}{r} 8 \\ 5 \end{array}$	$\begin{array}{r} 9 \\ 7 \end{array}$	$\begin{array}{r} 6 \\ 8 \end{array}$

► When you multiply a number by 1, or multiply 1 by a number, you know that the answer is the same as the number.

$$\begin{array}{r} \text{One } 8 \text{ is } 8. \\ 8 \\ 1 \\ \hline 8 \end{array}$$

$$\begin{array}{r} \text{Eight } 1\text{'s are } 8. \\ 1 \\ 8 \\ \hline 8 \end{array}$$

How Do We Multiply?

1. Julia bought 2 packages of colored paper. In each package, there were 24 sheets. How many sheets of paper were there in the 2 packages?

$$\begin{array}{r} 24 \\ 2 \\ \hline 48 \end{array}$$

To find the answer, you multiply. Begin at the right and multiply the ones. Think, two 4's are 8. Write 8 under the 2 in ones' place. Then multiply the tens. Think, two 2's are 4. Write 4 in tens' place, under the 2 of the top number.

2. In the example at the right, think, three 1's, three 2's, and then three 3's. Be sure to multiply in the right order.

$$\begin{array}{r} 321 \\ 3 \\ \hline 963 \end{array}$$

► The number we multiply by is called the **multiplier**. In Example 2 the multiplier is 3. What is the multiplier in Example 1?

► In multiplication, the answer is called the **product**. Read the product in each of the examples above.

► The multiplication sign ($\times$) tells us to multiply: $6 \times 8 = 48$. We read this, "six 8's are 48" or "6 times 8 equal 48."

Write the products for these examples on folded paper:

	A	B	C	D	E	F	G
3.	$\begin{array}{r} 24 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 32 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 53 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 72 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 31 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 51 \\ 5 \\ \hline \end{array}$
4.	$\begin{array}{r} 81 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 93 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 614 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 831 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 821 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 621 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 711 \\ 8 \\ \hline \end{array}$

Look again at the examples on page 40. If any of them are difficult for you, write them with their answers on small cards. Study them until you are sure of the products.

How to Carry in Multiplication

1. Nancy has 18 books of phonograph records, 18
with 8 records in each book. How many records 8
does she have? 144

Nancy multiplied. She thought to herself, "Eight 8's are 64, or 6 tens and 4 ones. I write the 4 in ones' place. Eight 1's are 8, and 6 (which I carried) are 14. I write the 4 in tens' place and the 1 in hundreds' place."

Nancy found that she had 144 records.

2. In the example at the right, think, nine 1's 971
are 9. Write 9 in ones' place in the product. 9
Then, nine 7's are 63. Write 3 in tens' place, 8739
and carry 6. Next, nine 9's are 81, and the 6
carried to hundreds' place make 87 hundreds. Write the 7
in hundreds' place and the 8 in thousands' place.

The product is 8739.

Copy the examples below and multiply. Check by multiplying again.

3. In this row you will have to carry from ones' place.

A	B	C	D	E	F	G
25	38	58	26	67	78	39
<u>3</u>	<u>5</u>	<u>7</u>	<u>6</u>	<u>8</u>	<u>4</u>	<u>6</u>

4. In this row you will have to carry from tens' place.

761	574	692	451	483	271	341
<u>3</u>	<u>2</u>	<u>4</u>	<u>6</u>	<u>3</u>	<u>5</u>	<u>4</u>

5. Here you must remember to carry more than once.

649	236	348	479	418	256	235
<u>5</u>	<u>7</u>	<u>9</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>8</u>

Multiplying and Adding

The examples below will help you to remember to add to the product the number to be carried. Write the answers.

A

1. Three 5's and 1 are ?
2. Four 6's and 3 are ?
3. Seven 5's and 4 are ?
4. Three 9's and 2 are ?
5. Seven 7's and 6 are ?
6. Nine 5's and 3 are ?
7. Eight 2's and 1 are ?
8. Nine 7's and 5 are ?
9. Six 8's and 3 are ?

B

- Four 9's and 3 are ?
- Seven 8's and 6 are ?
- Five 5's and 4 are ?
- Six 6's and 4 are ?
- Eight 8's and 5 are ?
- Six 3's and 2 are ?
- Nine 6's and 4 are ?
- Eight 4's and 3 are ?
- Five 8's and 2 are ?

Using Multiplication in Examples

The product for the first example below is given. Study this example. Then copy the others. Multiply and check.

Be sure to write each figure of the product in the right place.

	A	B	C	D	E	F
1.	$\begin{array}{r} 963 \\ 4 \\ \hline 3852 \end{array}$	$\begin{array}{r} 687 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 485 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 693 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 819 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 674 \\ 8 \\ \hline \end{array}$
2.	$\begin{array}{r} 567 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 876 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 724 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 839 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 475 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 637 \\ 7 \\ \hline \end{array}$
3.	$\begin{array}{r} 158 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 359 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 597 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 243 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 459 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 215 \\ 8 \\ \hline \end{array}$

Zeros in Multiplication

1. In the example at the right, there are no ones in ones' place to multiply. Write 0 in ones' place in the product. Four 6's are 24. Write 24 in its proper place, the 4 under the 6 in tens' place and the 2 in hundreds' place.

$$\begin{array}{r} 60 \\ 4 \\ \hline 240 \end{array}$$

2. In the example at the right, you think, three 3's are 9. Write 9 in ones' place in the product. There are no tens in tens' place to multiply. Write 0 in tens' place. Three 2's are 6. Write 6 in hundreds' place.

$$\begin{array}{r} 203 \\ 3 \\ \hline 609 \end{array}$$

3. Here you think, five 5's are 25. Write 5 in ones' place and carry 2 tens. There are no tens to multiply, but you carried 2 tens. Write the 2 in tens' place. Five 3's are 15. Write the 5 in hundreds' place and the 1 to the left in thousands' place.

$$\begin{array}{r} 305 \\ 5 \\ \hline 1,525 \end{array}$$

Copy, multiply, and check. Remember that you carry hundreds or thousands just as you carry tens.

	A	B	C	D	E	F
4.	$\begin{array}{r} 406 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 970 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 508 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 430 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 600 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 807 \\ 9 \\ \hline \end{array}$
5.	$\begin{array}{r} 3605 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 9058 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 2340 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 5006 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 7206 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 9807 \\ 4 \\ \hline \end{array}$
6.	$\begin{array}{r} 4506 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 8079 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 3490 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 2408 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 8790 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 5008 \\ 8 \\ \hline \end{array}$
7.	$\begin{array}{r} 2607 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 3650 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 4903 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 3500 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 1097 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 6109 \\ 7 \\ \hline \end{array}$



Multiplying Dollars and Cents

1. Paul's mother asked him to get two layer cakes at the bakery. They would cost \$1.35 each. "How much money shall I give you to pay for the cakes, Paul?" his mother asked.

When Paul multiplied, he found he would have to pay \$2.70. Is his work correct? Notice that he has two places for cents at the right of the point. He put a dollar sign before the 2 in the answer.

$$\begin{array}{r} \$1.35 \\ 2 \\ \hline \$2.70 \end{array}$$

2. Another day, Paul bought 3 dozen doughnuts at \$.35 a dozen. How much did he pay for 3 dozen? Notice the way he multiplied. Where did he put the point in the answer? Where did he put the dollar sign?

$$\begin{array}{r} \$.35 \\ 3 \\ \hline \$1.05 \end{array}$$

Copy the examples below and multiply. Multiply again to check your work.

	A	B	C	D	E	F	G
3.	\$\$.34	\$.19	\$.70	\$.48	\$.92	\$.57	\$.56
	<u>6</u>	<u>4</u>	<u>5</u>	<u>7</u>	<u>9</u>	<u>7</u>	<u>8</u>
4.	\$4.80	\$5.09	\$8.75	\$8.59	\$7.53	\$8.90	\$9.62
	<u>9</u>	<u>3</u>	<u>4</u>	<u>6</u>	<u>9</u>	<u>8</u>	<u>7</u>

Multiplication — A Time-Saver

Four groups of children were having a relay race. There were 14 in each group. How many children were in the race?

We can write 14 four times and add to find the total number. But this is a slow way to find the answer. It is faster to multiply when we want to find how many there are in several groups of the same size.

$$\begin{array}{r} 14 \quad 14 \\ 14 \quad 4 \\ 14 \quad \hline 14 \quad 56 \\ \hline 56 \end{array}$$

Should You Add or Multiply?

Read each problem carefully. Then think, "Should I add, or multiply, to find the answer?" Check your work.

1. If a box of grapefruit weighs 68 pounds, what is the total weight of 5 boxes?
2. James bought a Cub Scout shirt for \$2.65 and a neckerchief for \$.45. How much did he pay for both?
3. Sally's violin lessons cost \$1.50 each. How much will 8 lessons cost?
4. Henry earned \$.35 every Saturday morning by helping his father. How much did he earn in 6 weeks?
5. In a Halloween parade, there were 7 children on one float, 8 on another, and 6 on a third float. How many children were on the three floats?
6. Eleanor bought 3 books to read. Each book cost \$1.75. What was the cost of the books?
7. Ray made four trips to the city. Each time his round-trip ticket cost \$3.65. How much did the 4 trips cost?
8. Jean saw that there were 18 pictures on each of 3 bulletin boards. How many pictures were there in all?
9. Ralph took 3 friends to a football game. Each ticket cost 28 cents. How much did he pay for 4 tickets?

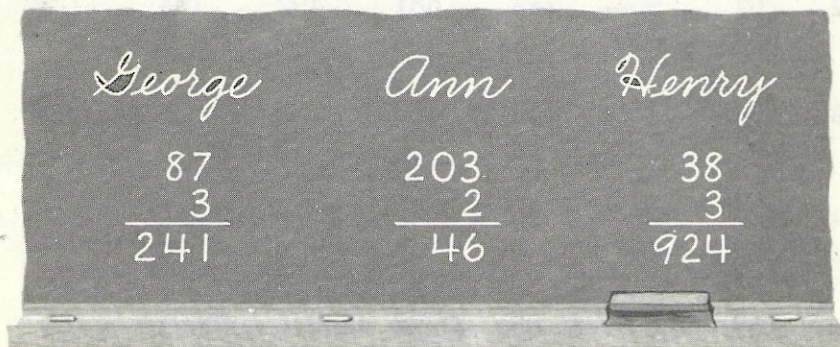
Things to Remember When Multiplying

Multiply in the correct order — first, ones; then, tens; then, hundreds; then, thousands.

Remember to carry when necessary. Write each figure of the product in its proper place. Check your work.

If you always remember these things, you will not make mistakes such as George, Ann, and Henry made in the examples below. Find what is wrong in these examples.

Copy each of the examples and multiply correctly.



Copy the examples below. Multiply and check.

	A	B	C	D	E	F
1.	$\begin{array}{r} 407 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 256 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 579 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 801 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 238 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 764 \\ \times 5 \\ \hline \end{array}$
2.	$\begin{array}{r} 983 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 2406 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 3084 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 6532 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 7250 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 5678 \\ \times 3 \\ \hline \end{array}$
3.	$\begin{array}{r} 3905 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 1046 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 5917 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 7009 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 6138 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 2859 \\ \times 2 \\ \hline \end{array}$
4.	$\begin{array}{r} 4607 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 1089 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 3546 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 9030 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 8642 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 6740 \\ \times 9 \\ \hline \end{array}$

Making Sure of Multiplication

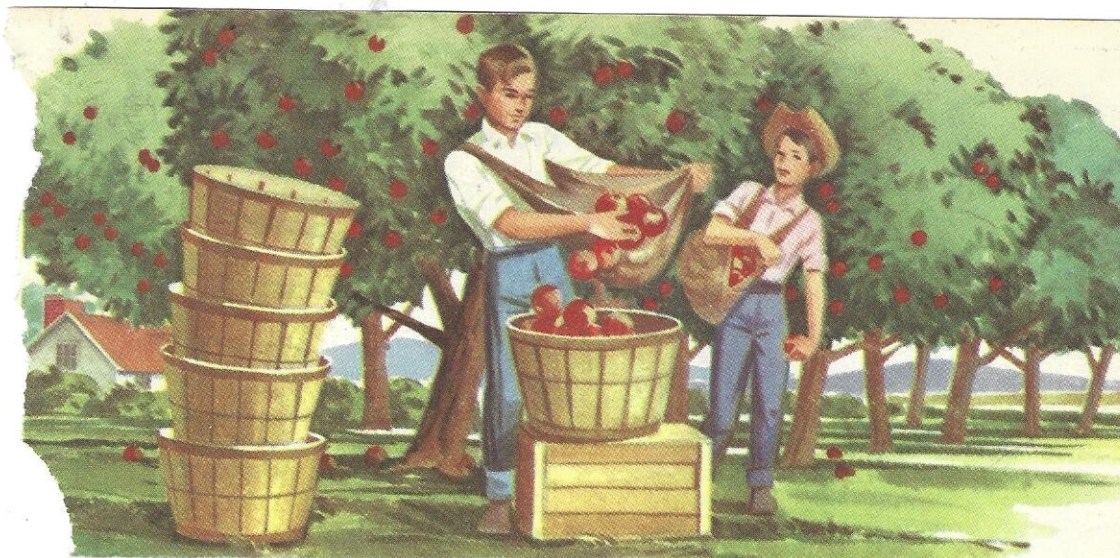
Copy the examples below and multiply. Check by multiplying again. If you make mistakes, turn to the pages listed at the right of the rows and study those examples again.

	A	B	C	D	E	F	
1.	$\begin{array}{r} 32 \\ 4 \end{array}$	$\begin{array}{r} 83 \\ 3 \end{array}$	$\begin{array}{r} 71 \\ 8 \end{array}$	$\begin{array}{r} 623 \\ 2 \end{array}$	$\begin{array}{r} 841 \\ 2 \end{array}$	$\begin{array}{r} 521 \\ 3 \end{array}$	41
2.	$\begin{array}{r} 67 \\ 4 \end{array}$	$\begin{array}{r} 95 \\ 6 \end{array}$	$\begin{array}{r} 743 \\ 3 \end{array}$	$\begin{array}{r} 581 \\ 5 \end{array}$	$\begin{array}{r} 492 \\ 4 \end{array}$	$\begin{array}{r} 794 \\ 2 \end{array}$	42
3.	$\begin{array}{r} 764 \\ 7 \end{array}$	$\begin{array}{r} 436 \\ 9 \end{array}$	$\begin{array}{r} 742 \\ 6 \end{array}$	$\begin{array}{r} 486 \\ 8 \end{array}$	$\begin{array}{r} 729 \\ 5 \end{array}$	$\begin{array}{r} 638 \\ 6 \end{array}$	43
4.	$\begin{array}{r} 309 \\ 8 \end{array}$	$\begin{array}{r} 790 \\ 9 \end{array}$	$\begin{array}{r} 900 \\ 3 \end{array}$	$\begin{array}{r} 3640 \\ 5 \end{array}$	$\begin{array}{r} 2058 \\ 9 \end{array}$	$\begin{array}{r} 3209 \\ 7 \end{array}$	44
5.	$\begin{array}{r} \$58 \\ 6 \end{array}$	$\begin{array}{r} \$80 \\ 4 \end{array}$	$\begin{array}{r} \$7.85 \\ 7 \end{array}$	$\begin{array}{r} \$5.92 \\ 8 \end{array}$	$\begin{array}{r} \$3.46 \\ 9 \end{array}$	$\begin{array}{r} \$3.64 \\ 8 \end{array}$	45

KEEPING ON YOUR TOES

Use each sentence below to make a problem to be solved by multiplication. You will have to make up a question of your own. For example, "Dick buys 3 U. S. Savings Stamps each month." You might ask the question, "How many stamps does he buy in 9 months?"

1. To get to school John has to walk 16 blocks.
2. On a trip, Dan's father drove about 250 miles a day.
3. Betty spent 25 cents a day for her lunch at school.
4. A bear at the zoo eats 12 loaves of bread each day.
5. You can take 8 pictures with one roll of film.



Picking Apples

1. Fred and Tom helped pick apples on their uncle's farm. Fred picked 8 bushels a day. How many bushels could he pick in 6 days?
2. Tom was older than Fred. He picked 14 bushels a day. How many bushels could he pick in 6 days?
3. If a bushel of apples weighs 50 pounds, what is the weight of 9 bushels?
4. If a load of apples contains 85 bushels, how many bushels would there be in 4 loads?
5. One kind of apples sells for \$2.35 a bushel. What would be the cost of 8 bushels?
6. Fred's uncle paid him \$2.25 a day. How much did he earn in a working week of 6 days?
7. How much could Fred earn in 2 weeks?
8. Mr. James sold 36 bushels of his best apples to each of 5 grocers. How many bushels did the grocers buy?
9. Mr. Miller, one of the grocers, sold some of his apples for \$3.25 a bushel. How much did he receive for 9 bushels?

Keeping in Practice

Set I

Copy the examples below and add. Check your work.

	A	B	C	D	E
1.	7 9 8 6 5 3	4 0 7 2 8 5	9 6 0 8 3 7	68 24 18 35 47	56 19 85 40 32
2.	\$1.85 5.50 6.68 5.00	\$7.50 6.09 9.00 3.29	\$6.25 .43 .09 7.34	\$3.96 4.75 .55 .87	\$7.09 5.08 6.10 5.80

Set II

Copy and subtract. Check your work.

1.	402 196	846 458	800 254	730 582	627 349
2.	3412 1857	4800 2847	8604 3736	9025 5789	7500 830

Set III

Copy and multiply. Check by multiplying again.

1.	486 5	803 3	735 6	490 7	600 9
2.	2708 4	6083 8	3590 5	6009 6	8357 9

Deciding What to Do

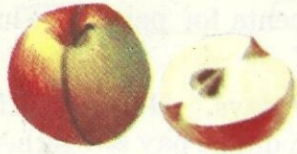
Read each problem carefully. Think what the problem tells you, and what the question asks. Decide whether to add, subtract, or multiply. Then complete the work. Check your answer.

1. Jerry built a house for his dog. He paid \$4.75 for the lumber, 28 cents for nails, and 98 cents for paint. What was the total cost of the dog house?
2. He left his dog at a kennel for 7 days. He paid \$1.50 a day for the dog's care. How much did he pay altogether?
3. Jerry bought 8 boxes of dog biscuit at 39 cents a box. How much did he pay for the 8 boxes of dog biscuit?
4. He paid \$1.35 for a leash, \$1.75 for a dog blanket, and for a dog's dish, 39 cents. How much did he pay in all?
5. If it costs Jerry \$1.15 to feed his dog for one week, how much will it cost to feed the dog for 4 weeks?
6. Jerry and his dog together weigh 145 pounds. Jerry weighs 86 pounds. What is the weight of the dog?



Fractional Parts

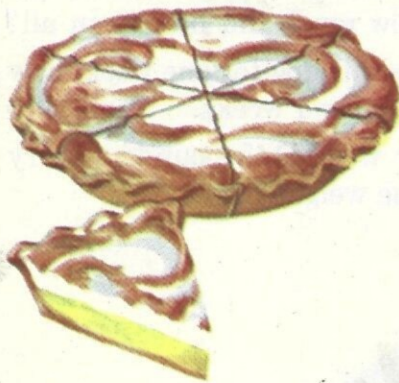
In the pictures below there are four things which have been divided into equal parts. Into how many equal parts has the apple been divided? the loaf cake? the pie? the layer cake?



One-half $\frac{1}{2}$



One-fourth $\frac{1}{4}$



One-sixth $\frac{1}{6}$



One-eighth $\frac{1}{8}$

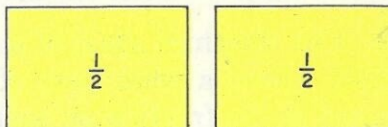
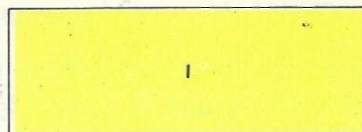
The name of each part is given in figures below the picture of the part. What part of an apple is shown? What part of a loaf cake? a pie? a layer cake?

► Parts of whole things, such as one-half, one-fourth, one-sixth, and one-eighth, are called **fractional parts**, or **fractions**. We can write them: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{8}$.

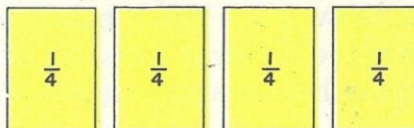
Place Cards for a Party

Mary made eight place cards for a Halloween party. To do this she folded and cut a sheet of heavy yellow paper into eight equal pieces.

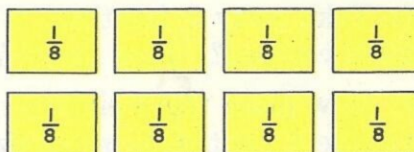
1. First Mary cut the paper into two equal pieces. Each of the two equal pieces is what part of the whole sheet? In the fraction $\frac{1}{2}$, the 2 shows that the paper was divided into two equal parts. The 1 means one of the two equal parts.



2. Next she cut each of the two pieces of paper into two equal parts. Then how many pieces did she have? Each piece was what part of the whole paper? In the fraction $\frac{1}{4}$, what does the 4 show? What does the 1 mean?



3. Then Mary cut each fourth of the paper into two equal parts. How many pieces did she have? Each piece was what part of the whole paper? In the fraction $\frac{1}{8}$, what does the figure 8 show? What does the 1 mean?



4. Into how many halves can a whole thing be divided?
5. How many fourths are there in half the sheet of paper? In the fraction $\frac{2}{4}$, what does the 2 show? How many fourths are in the whole paper? Four fourths is written $\frac{4}{4}$.
6. How many eighths are there in one fourth of the whole sheet? in one half? in the whole sheet of paper?

Learning More about Parts of Things

You will need 4 sheets of paper that are exactly the same size to do these exercises.

1. Write the words **one whole** on one of the sheets.
2. Fold the second sheet in half and cut it into 2 pieces that are equal in size. Each piece is what part of the whole sheet? Write the name of the fraction on each piece.
3. Cut the third sheet of paper into 4 pieces of equal size. Each piece is what part of the whole sheet? Write the name of the fraction on each of the 4 pieces.
4. Cut the fourth sheet into 8 pieces that are exactly the same size. What would you call each of the 8 pieces? Write the name of the fraction on each piece.
5. Now place the 2 halves on the whole sheet of paper. Are the 2 halves the same size as the whole sheet? How many halves equal one whole?
6. Now place the 4 fourths together on the whole sheet. Are the 4 fourths together the same as the whole? How many fourths equal one whole?
7. Take away 2 fourths. What part of the whole sheet is left covered? How many fourths equal one-half?
8. Now place the 8 eighths on the whole sheet of paper. Are the 8 eighths the same size as the whole sheet? How many eighths equal one whole?
9. Now take away 4 eighths. What part of the whole sheet is left covered? How many eighths equal one-half?
10. Take away all but 2 eighths. What part of the whole sheet is left covered? How many eighths equal one-fourth?

Keep these papers to study again.

Equal Fractions

The circles at the right show that several fractions may be equal in value.

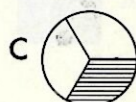
1. Circle A is divided into how many equal parts? What part is shaded?



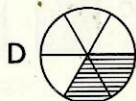
2. Into how many equal parts is the lower half of Circle B divided? One-half, or how many fourths of the circle, is shaded? How many fourths equal one-half?



3. Circle C is divided into how many equal parts? What fractional part is shaded?



4. Circle D is divided into how many equal parts? How many sixths equal $\frac{1}{3}$? $\frac{2}{3}$?



5. Look at Circle E. What part is shaded? How many sixths equal $\frac{1}{2}$?



6. The shaded part of Circle F is what fraction of the circle? How many eighths equal $\frac{1}{2}$? How many eighths equal $\frac{1}{4}$? $\frac{3}{4}$? $\frac{4}{4}$?

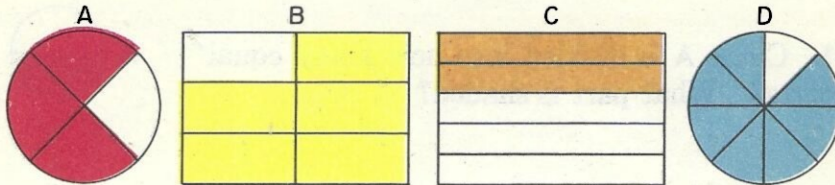


7. How many halves equal $\frac{4}{4}$? $\frac{6}{6}$? $\frac{8}{8}$?

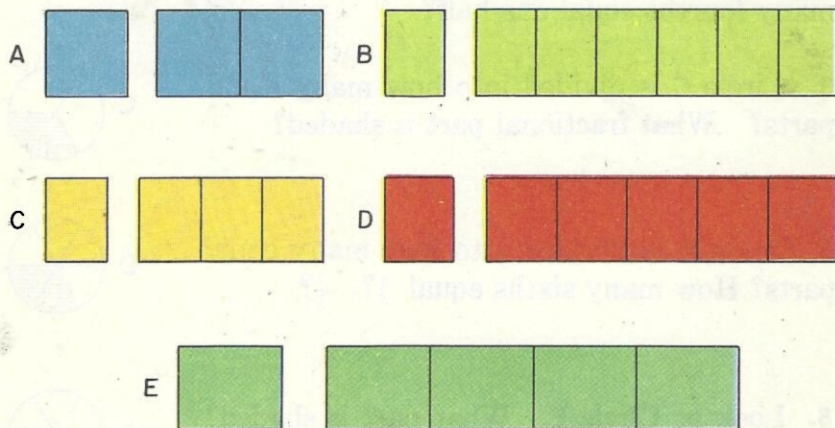
8. Tell which of the following pairs of fractions have the same value: $\frac{1}{4}, \frac{1}{8}$; $\frac{1}{2}, \frac{2}{4}$; $\frac{3}{4}, \frac{6}{8}$; $\frac{2}{3}, \frac{4}{6}$; $\frac{3}{8}, \frac{1}{2}$; $\frac{1}{3}, \frac{2}{6}$.

Naming Fractional Parts

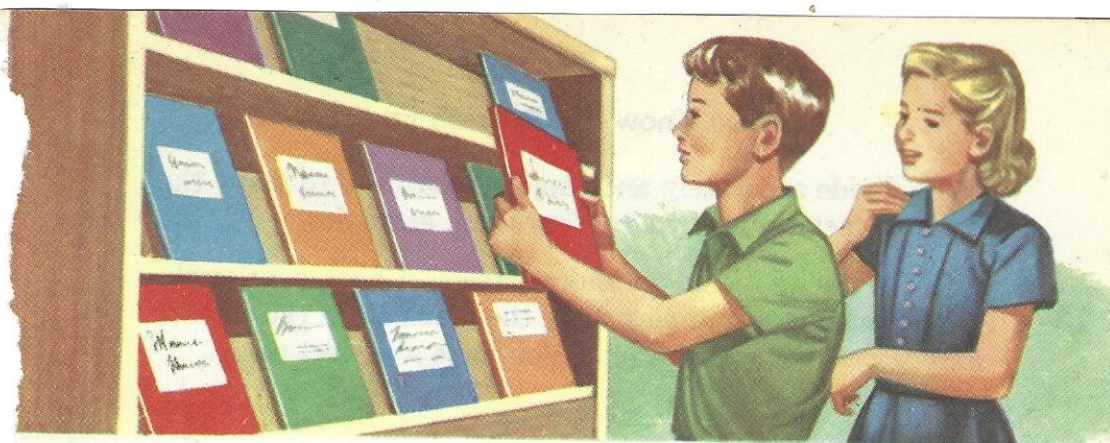
1. Study the figures below. Tell what part of each figure is colored.



2. Study the pairs of figures below. In each pair, the small figure is equal to what part of the large one?



3. Draw a line 4 inches long. Draw another line 2 inches long. Two inches are what part of four inches?
4. Draw a line 3 inches long. Draw another line 1 inch long. One inch is what part of three inches?
5. Draw a line 8 inches long. Draw another line that will be one-eighth as long as the 8-inch line.
6. John's new pencil was 6 inches long. It is now 1 inch shorter. What fractional part of the pencil has he used? What fractional part of the pencil is left?



When Do We Divide?

The children in the art class were learning to make scrap-books. Each book was to contain 6 sheets of paper. Miss Gibson said, "There are 24 sheets of paper in one package. That will be enough for how many books?"

Dick said, "That is enough for 4 books because there are four 6's in 24."

He divided to find how many groups of 6 there are in 24.

The children made 12 attractive books. They displayed them in a showcase in the hall. They put 4 books on each shelf. How many shelves were needed?

The children divided 12 by 4 and found that 3 shelves would be needed to display the books.

They divided to find how many groups of 4 there are in 12.

► In division the number we divide by is called the **divisor**. The number which is divided is called the **dividend**. The answer is called the **quotient**.

$$\begin{array}{r} 3 \text{ quotient} \\ \text{divisor } 4 \overline{)12} \text{ dividend} \end{array}$$

This sign ($\div$) tells us to divide: $12 \div 4 = 3$. We read this, "12 divided by 4 equals 3."

Do You Know the Division Facts?

To divide accurately and rapidly, you have to know the division facts. Test yourself on these examples.

Write the quotients on folded paper. Check your work. If you miss any examples, copy them and learn the correct answers. Test yourself until you have a perfect score.

A	B	C	D	E	F	G	H
1. $2\overline{)16}$	$5\overline{)45}$	$3\overline{)24}$	$2\overline{)14}$	$5\overline{)15}$	$8\overline{)24}$	$9\overline{)63}$	$4\overline{)36}$
2. $3\overline{)18}$	$9\overline{)72}$	$7\overline{)63}$	$9\overline{)54}$	$2\overline{)18}$	$3\overline{)21}$	$3\overline{)15}$	$6\overline{)30}$
3. $7\overline{)28}$	$6\overline{)48}$	$4\overline{)12}$	$8\overline{)40}$	$5\overline{)25}$	$2\overline{)12}$	$3\overline{)9}$	$9\overline{)27}$
4. $8\overline{)64}$	$2\overline{)8}$	$4\overline{)32}$	$9\overline{)45}$	$2\overline{)4}$	$7\overline{)42}$	$6\overline{)24}$	$9\overline{)81}$
5. $2\overline{)10}$	$7\overline{)14}$	$7\overline{)35}$	$6\overline{)12}$	$4\overline{)20}$	$5\overline{)20}$	$9\overline{)36}$	$5\overline{)10}$
6. $7\overline{)21}$	$5\overline{)40}$	$4\overline{)16}$	$5\overline{)30}$	$8\overline{)16}$	$6\overline{)36}$	$8\overline{)72}$	$7\overline{)56}$
7. $4\overline{)8}$	$6\overline{)42}$	$6\overline{)54}$	$8\overline{)48}$	$9\overline{)18}$	$4\overline{)28}$	$4\overline{)24}$	$2\overline{)6}$
8. $8\overline{)56}$	$8\overline{)32}$	$3\overline{)27}$	$7\overline{)49}$	$3\overline{)12}$	$5\overline{)35}$	$6\overline{)18}$	$3\overline{)6}$

► When a number is divided by another number just like it, the quotient is 1. When we divide 4 by 4, we are finding how many 4's there are in 4.

How many 5's are there in 5? How many 8's in 8?

Decorating Cards

Up to this time you have been using fractions to find a part of one whole thing. You also use fractions to find a part of a group of things.

1. Sally had 8 cards to decorate for Thanksgiving. She divided them into two equal groups. She painted pumpkins on the cards in one group. On how many cards did she paint pumpkins?



To find the number of cards in each of the two equal groups, divide 8 by 2. When you divide 8 by 2, you find $\frac{1}{2}$ of 8. One half of 8 is 4.

Sally painted pumpkins on 4 cards.

2. If you divide 8 cards into 4 equal groups, how many cards are there in each group?

You divide 8 by 4, or find $\frac{1}{4}$ of 8. One fourth of 8 is 2.

3. If you divide 8 cards into 8 equal groups, each group is $\frac{1}{8}$ of 8. Divide 8 by 8 to find $\frac{1}{8}$ of 8. One eighth of 8 is 1.

► When you know how many things there are and how many groups there are, you divide to find out how many things are in each group.

Copy the examples below and write the answers:

A

4. $\frac{1}{8}$ of 64 = ?
5. $\frac{1}{5}$ of 10 = ?
6. $\frac{1}{3}$ of 12 = ?
7. $\frac{1}{7}$ of 49 = ?
8. $\frac{1}{2}$ of 16 = ?
9. $\frac{1}{4}$ of 32 = ?

B

- $\frac{1}{3}$ of 15 = ?
- $\frac{1}{6}$ of 6 = ?
- $\frac{1}{5}$ of 20 = ?
- $\frac{1}{8}$ of 72 = ?
- $\frac{1}{4}$ of 20 = ?
- $\frac{1}{6}$ of 30 = ?

C

- $\frac{1}{7}$ of 56 = ?
- $\frac{1}{9}$ of 63 = ?
- $\frac{1}{7}$ of 28 = ?
- $\frac{1}{9}$ of 54 = ?
- $\frac{1}{8}$ of 40 = ?
- $\frac{1}{7}$ of 7 = ?

How Do We Divide?

1. Jimmy had 69 shells in his collection. He had three boxes to put them in. If he divided them equally, how many shells did he put in each box?

Jimmy divided 69 by 3. First, he divided 6 by 3, and wrote 2 above the 6. Then he divided 9 by 3, and wrote 3 above the 9.

$$\begin{array}{r} 23 \\ 3 \overline{)69} \end{array}$$

2. You cannot divide 2 by 4. Think, how many 4's in 28? Write 7 above the 8. The 0 shows that there is nothing in that place to divide. Write 0 in the quotient.

$$\begin{array}{r} 70 \\ 4 \overline{)280} \end{array}$$

Always write each figure in the quotient above the last figure in the dividend you are using.

3. How many 2's in 4? Write 2 above the 4. There are no tens in tens' place to divide. What do you write in the quotient? Then divide 8 by 2.

$$\begin{array}{r} 204 \\ 2 \overline{)408} \end{array}$$

Copy these examples and divide:

A	B	C	D	E	F
4. $2 \overline{)64}$	$4 \overline{)84}$	$3 \overline{)93}$	$5 \overline{)55}$	$2 \overline{)28}$	$3 \overline{)63}$
5. $7 \overline{)140}$	$4 \overline{)160}$	$8 \overline{)400}$	$7 \overline{)210}$	$6 \overline{)180}$	$8 \overline{)160}$
6. $4 \overline{)408}$	$3 \overline{)609}$	$2 \overline{)802}$	$3 \overline{)309}$	$2 \overline{)604}$	$2 \overline{)206}$
7. $6 \overline{)306}$	$4 \overline{)248}$	$3 \overline{)216}$	$3 \overline{)189}$	$2 \overline{)148}$	$4 \overline{)124}$
8. $5 \overline{)305}$	$6 \overline{)126}$	$4 \overline{)364}$	$3 \overline{)246}$	$2 \overline{)104}$	$3 \overline{)279}$
9. $7 \overline{)357}$	$9 \overline{)189}$	$2 \overline{)186}$	$7 \overline{)637}$	$9 \overline{)369}$	$4 \overline{)328}$



Learning about Remainders

Helen can put 3 photographs on each page of her album. If she has 14 photographs, how many pages will she fill?

Think, how many 3's in 14? You know that four 3's are 12, and that five 3's are 15. But 14 is less than 15. You can see then that there are four 3's in 14.

$$\begin{array}{r} 4 \text{ R}2 \\ 3 \overline{)14} \\ \underline{12} \\ 2 \end{array}$$

Write the quotient, 4, above the 4 of 14. Multiply 3 by 4 and write 12 below the 14. Subtract.

Since 14 cannot be divided evenly by 3, there will be a remainder. The remainder is 2. It is written as shown above, R2.

Now, check the work. You found that there are four 3's in 14. What are four 3's? Add the remainder, 2, to the product. Do you get 14?

$$\begin{array}{r} \text{Check} \\ 3 \\ \times 4 \\ \hline 12 \\ + 2 \\ \hline 14 \end{array}$$

To check division, multiply the divisor by the quotient or the quotient by the divisor. If there is a remainder, add it to the product.

Copy the examples below and divide. If there is a remainder, write it as shown above. Check your work.

A	B	C	D	E	F
1. $3 \overline{)17}$	$4 \overline{)29}$	$5 \overline{)43}$	$6 \overline{)46}$	$7 \overline{)34}$	$8 \overline{)29}$
2. $7 \overline{)46}$	$9 \overline{)53}$	$5 \overline{)28}$	$6 \overline{)58}$	$8 \overline{)52}$	$5 \overline{)19}$
3. $9 \overline{)75}$	$7 \overline{)55}$	$3 \overline{)26}$	$8 \overline{)71}$	$4 \overline{)39}$	$9 \overline{)30}$
4. $9 \overline{)44}$	$6 \overline{)41}$	$5 \overline{)39}$	$7 \overline{)61}$	$8 \overline{)62}$	$6 \overline{)53}$

Division Step by Step

One hundred five children attended a school party. Miss Ferguson told them to form in groups of 8 for square dancing. She said, "If there is one extra person, that one may call the dances. If not, I will be the caller." Did Miss Ferguson have to act as caller?

1. **Divide:** Think, how many 8's in 10?
Write 1 above the 0, as shown at the right.

$$\begin{array}{r} 1 \\ 8 \overline{)105} \\ \underline{8} \\ 2 \end{array}$$

2. **Multiply:** 1×8 equals 8. Write 8 under the 10.

3. **Compare** 8 with 10 to see that it is not larger than 10.

4. **Subtract:** $10 - 8 = 2$.

5. **Compare** 2 with 8 to see that what you have left is less than the divisor.

6. **Bring down** the 5 from the dividend to make 25, as shown in the example at the right below.

Now, you are ready to divide again.

1. **Divide:** Think, how many 8's in 25?
Write 3 above the 5 in 105.

$$\begin{array}{r} 13 \\ 8 \overline{)105} \\ \underline{8} \\ 25 \end{array}$$

2. **Multiply:** 3×8 equals 24. Write the 24 under the 25, as shown below.

3. **Compare** 24 with 25 to see that it is not larger than 25.

4. **Subtract:** $25 - 24 = 1$.

$$\begin{array}{r} 13 \text{ R}1 \\ 8 \overline{)105} \\ \underline{8} \\ 25 \\ \underline{24} \\ 1 \end{array}$$

5. **Compare** 1 with 8. One is less than the divisor 8.

There are no more figures to bring down. The 1 left over is the remainder.

How many groups were dancing?

Was there an extra child to call the dances?

Practicing Division

Copy the examples below and divide. Check your work.

A	B	C	D	E
1. $3\overline{)239}$	$5\overline{)473}$	$6\overline{)389}$	$4\overline{)314}$	$7\overline{)397}$
2. $6\overline{)494}$	$8\overline{)309}$	$3\overline{)106}$	$8\overline{)412}$	$9\overline{)223}$
3. $7\overline{)517}$	$4\overline{)382}$	$9\overline{)663}$	$6\overline{)575}$	$5\overline{)369}$
4. $8\overline{)395}$	$7\overline{)649}$	$2\overline{)159}$	$4\overline{)258}$	$9\overline{)629}$

Dividing Larger Numbers

Study the example at the right. How many figures are there in the dividend? In the quotient?

How many times did you divide? Is there a remainder?

$$\begin{array}{r}
 723 \text{ R}2 \\
 4 \overline{)2894} \\
 \underline{28} \\
 9 \\
 \underline{8} \\
 14 \\
 \underline{12} \\
 2
 \end{array}$$

Copy the examples below. Divide and check. Some of the examples will have remainders; some will not.

A	B	C	D
1. $6\overline{)3745}$	$5\overline{)2683}$	$7\overline{)5074}$	$4\overline{)2279}$
2. $3\overline{)2810}$	$5\overline{)938}$	$6\overline{)2152}$	$9\overline{)5082}$
3. $4\overline{)732}$	$3\overline{)554}$	$8\overline{)5795}$	$6\overline{)4746}$
4. $8\overline{)7650}$	$4\overline{)2968}$	$7\overline{)6902}$	$9\overline{)7859}$

Answers with Zeros

Mr. Cory had 243 empty match books in his collection. He divided them equally among his 6 grandchildren. How many match books did each child receive? How many match books were left over?

First divide 24 by 6. Write 4 in the quotient. Multiply 6 by 4 and write 24. Compare 24 with 24. Subtract. Nothing is left. Bring down the 3.

$$\begin{array}{r} 40 \text{ R}3 \\ 6 \overline{)243} \\ \underline{24} \\ 3 \end{array}$$

Now divide 3 by 6. But you cannot divide 3 by 6. To show this, write 0 in the quotient. What is the remainder?

Mr. Cory gave each child 40 match books and had 3 left over.

Does the check show that you have the correct answer? If you had not written 0 in the quotient, what would the product have been?

$$\begin{array}{r} \text{Check} \\ 40 \\ \times 6 \\ \hline 240 \\ + 3 \\ \hline 243 \end{array}$$

Each time you use another figure in the dividend, you must write a figure in the quotient. The figure may be 0, as in the example above.

Copy the examples below. Divide and check.

A	B	C	D	E
1. $4 \overline{)163}$	$7 \overline{)420}$	$8 \overline{)242}$	$5 \overline{)350}$	$3 \overline{)272}$
2. $6 \overline{)125}$	$2 \overline{)160}$	$9 \overline{)456}$	$4 \overline{)281}$	$8 \overline{)647}$
3. $3 \overline{)61}$	$5 \overline{)453}$	$7 \overline{)286}$	$9 \overline{)540}$	$2 \overline{)101}$
4. $6 \overline{)182}$	$8 \overline{)725}$	$5 \overline{)154}$	$7 \overline{)490}$	$3 \overline{)180}$
5. $4 \overline{)322}$	$5 \overline{)202}$	$6 \overline{)304}$	$9 \overline{)187}$	$6 \overline{)483}$



The children in Miss Henry's class brought in 425 Christmas cards to send to four hospitals. Janet and Ray helped to divide them into 4 equal groups. How many cards went to each hospital? Were any left over?

Divide 4 by 4. When you subtract, there is nothing left. Bring down the 2.

You cannot divide 2 by 4, because 2 is smaller than 4. Write 0 in the quotient above the 2. Bring down the 5.

Divide 25 by 4. Write 6 in the quotient above the 5. Multiply 4 by 6. Write 24 beneath the 25.

Subtract. Write 1 as the remainder.

They sent 106 Christmas cards to each hospital. One card was left over.

$$\begin{array}{r}
 106 \text{ R}1 \\
 4 \overline{)425} \\
 \underline{4} \\
 25 \\
 \underline{24} \\
 1
 \end{array}$$

Copy the following examples. Divide and check.

A	B	C	D	E
6. $7 \overline{)2849}$	$5 \overline{)4033}$	$9 \overline{)2724}$	$8 \overline{)876}$	$6 \overline{)3617}$
7. $9 \overline{)4557}$	$4 \overline{)3231}$	$7 \overline{)6307}$	$6 \overline{)2434}$	$3 \overline{)2124}$
8. $8 \overline{)2422}$	$9 \overline{)6316}$	$5 \overline{)2049}$	$4 \overline{)1220}$	$7 \overline{)4261}$

Dividing Dollars and Cents

1. In camp several girls were weaving bead bracelets on small looms. Four new looms were needed. They cost \$5.00 in all. How much did each loom cost?

The example at the right shows how to find the answer.

► In dividing dollars and cents, you divide just as in other division examples. When you finish dividing, remember that there must be two places for cents at the right of the point in the quotient. Place the dollar sign to show the quotient means dollars and cents.

$$\begin{array}{r} \$1.25 \\ 4 \overline{) \$5.00} \\ \underline{4} \\ 10 \\ \underline{8} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

How much did each loom cost?

2. Jim and his 2 brothers earned \$2.27 picking cherries and divided the money equally. How much did each boy get?

In the example at the right, what does the "R2¢" mean?

Each boy received 75 cents and 2 cents were left over.

$$\begin{array}{r} \$0.75 \text{ R}2\text{¢} \\ 3 \overline{) \$2.27} \\ \underline{21} \\ 17 \\ \underline{15} \\ 2 \end{array}$$

► In dividing dollars and cents, you will find that there may be a remainder, just as in other division examples.

Copy the examples below. Divide and check.

A	B	C	D
3. $2 \overline{) \$8.42}$	$6 \overline{) \$6.00}$	$3 \overline{) \$9.18}$	$5 \overline{) \$5.47}$
4. $4 \overline{) \$39.47}$	$8 \overline{) \$25.92}$	$7 \overline{) \$37.98}$	$5 \overline{) \$32.65}$
5. $5 \overline{) \$39.20}$	$6 \overline{) \$4.99}$	$9 \overline{) \$75.29}$	$7 \overline{) \$2.72}$
6. $4 \overline{) \$30.15}$	$9 \overline{) \$42.79}$	$3 \overline{) \$23.85}$	$6 \overline{) \$15.58}$
7. $7 \overline{) \$7.48}$	$6 \overline{) \$28.59}$	$8 \overline{) \$48.69}$	$8 \overline{) \$78.90}$

Things to Remember When Dividing

Write each figure in the quotient above the last figure of the dividend you are using.

After you multiply, compare the product with the number from which it must be subtracted, to see that it is not larger.

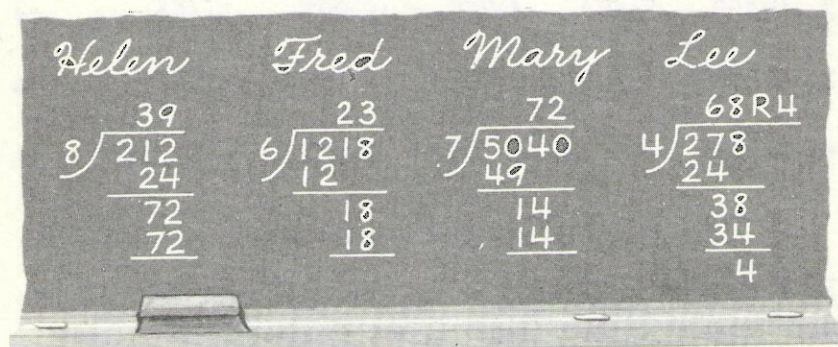
After you subtract, compare the remainder with the divisor, to see that it is less than the divisor.

Each time you use another figure in the dividend, write a figure in the quotient. If you cannot divide, write 0 in the quotient. Remember to use every figure in the dividend.

Write the remainder after the quotient.

Always check your work.

What mistakes did these pupils make? Find their mistakes. Write the examples and divide. Check your work.



Copy, divide, and check the following examples:

A	B	C	D
1. $9 \overline{)\$81.20}$	$3 \overline{)\$24.00}$	$7 \overline{)\$55.30}$	$8 \overline{)\$60.37}$
2. $6 \overline{)\$47.40}$	$5 \overline{)\$31.43}$	$4 \overline{)\$16.08}$	$9 \overline{)\$68.29}$

Making Sure of Division

These examples will help you see how well you can divide. Copy and divide. Then check to make sure each quotient is correct. If you make mistakes, turn to the pages listed and study them again.

Set I

A	B	C	D	E	
1. $2\overline{)26}$	3. $1\overline{)189}$	8. $4\overline{)480}$	3. $3\overline{)309}$	7. $4\overline{)490}$	60
2. $9\overline{)78}$	7. $6\overline{)64}$	8. $6\overline{)69}$	6. $4\overline{)40}$	5. $4\overline{)44}$	61
3. $8\overline{)737}$	9. $2\overline{)240}$	8. $6\overline{)603}$	4. $3\overline{)303}$	7. $2\overline{)249}$	62

Set II

1. $5\overline{)3712}$	4. $1\overline{)1456}$	7. $5\overline{)5896}$	6. $5\overline{)5898}$	8. $4\overline{)4278}$	63
2. $9\overline{)450}$	7. $4\overline{)424}$	4. $3\overline{)363}$	8. $3\overline{)327}$	5. $4\overline{)454}$	64
3. $6\overline{)2431}$	8. $2\overline{)2461}$	9. $3\overline{)3686}$	2. $1\overline{)1008}$	4. $3\overline{)3607}$	65
4. $3\overline{)\$6.27}$	5. $\$7.84\overline{)5}$	8. $\$49.87\overline{)8}$	9. $\$27.68\overline{)9}$	6. $\$46.92\overline{)6}$	66

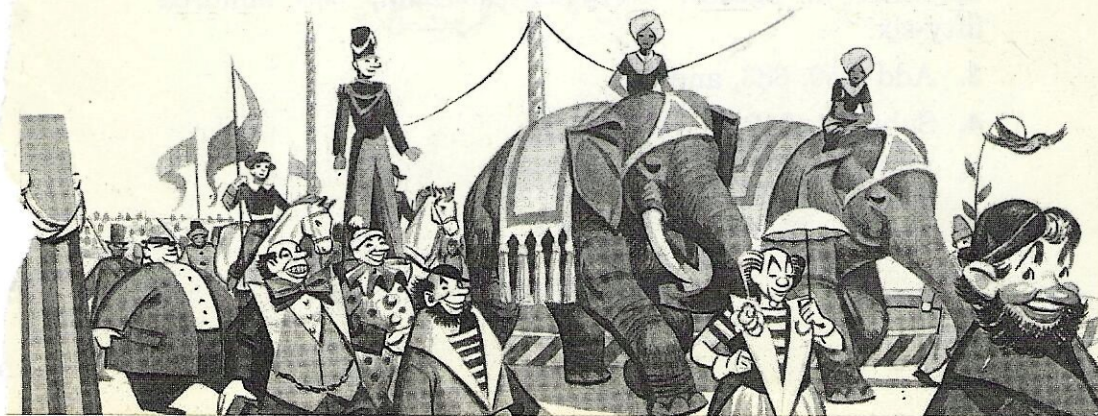
KEEPING ON YOUR TOES

1. If you know the cost of one baseball bat, how do you find the cost of two, or more, of these bats?
2. How do you find the total number of boys in two Cub Scout Packs?
3. If you know how much money you had and how much you spent, how do you find the amount you have left?
4. If you know the cost of 10 yards of ribbon, how do you find the cost of one yard?

Using Division in Problems

Read each problem carefully. Think what each question asks. Check your work.

1. A group of children needed 42 dishes of ice cream for a school party. They found that one brick of ice cream would serve 6 persons. How many bricks did they need?
2. At camp, Philip made a collection of 120 butterflies. He mounted them in 5 glass cases, with the same number in each case. How many butterflies did he have in each case?
3. Helen's father planted 300 tulip bulbs. He planted one-half of them along the garden fence. How many did he plant there?
4. John's father said, "My four new tires cost \$64.00." John said, "Then I can tell you what one tire cost." How much was it?
5. Sandy and his three younger brothers raked leaves to earn money to spend at the circus. They earned \$4.95, and agreed to divide it equally. How much did each boy get? How much was left over?
6. Their father took the 4 boys to lunch before the circus. He paid \$4.75 for the 5 lunches. The price of each lunch was the same. What did each lunch cost?
7. Six teachers went together to the circus. Their tickets cost \$9.00. How much did each teacher's ticket cost?



Keeping in Practice

Copy, work, and check the examples below:

Set I

	A	B	C	D	E
1.	65 76 16 <u>12</u>	\$7.98 .54 <u>1.46</u>	\$25.00 <u>- 6.95</u>	907 <u>× 4</u>	506 <u>- 265</u>
2.	826 <u>× 3</u>	715 <u>- 278</u>	974 <u>× 6</u>	3) <u>625</u>	4) <u>3618</u>

Set II

1.	\$6.50 .29 4.83 <u>5.05</u>	\$3.69 1.67 5.42 <u>2.76</u>	6408 <u>- 2928</u>	769 <u>× 7</u>	\$54.12 <u>- 17.98</u>
2.	708 <u>× 5</u>	800 <u>- 73</u>	9) <u>5374</u>	6) <u>418</u>	8) <u>3864</u>

Set III

1. Write in words: 12,010.
2. Write in figures: forty-six thousand, two hundred fifty-six.
3. Add 450, 683, and 29.
4. Subtract \$48.65 from \$67.34.
5. Multiply: 285 by 4; 490 by 5.
6. Divide: 527 by 5; 381 by 7.

Deciding What to Do

Think about each problem carefully before you decide what to do to solve the problem.

1. Eight boys had a neighborhood picnic around an outdoor fireplace. The total cost of the picnic was \$5.44. What was each boy's share of the cost?
2. Four pounds of meat were used to make hamburgers. If there were 6 hamburgers to the pound, how many hamburgers did they have?
3. How many hamburgers were there for each boy?
4. The meat cost 79 cents a pound. What was the cost of 4 pounds of meat?
5. Dick brought marshmallows to roast over the fire. There were 48 marshmallows in the box. How many were there for each boy?
6. The total cost of the ice cream was \$1.20. It made 8 servings. What was the cost of 1 serving?
7. John's mother gave each boy a taffy apple which cost 17 cents. How much did the 8 apples cost?



Is My Answer Sensible?

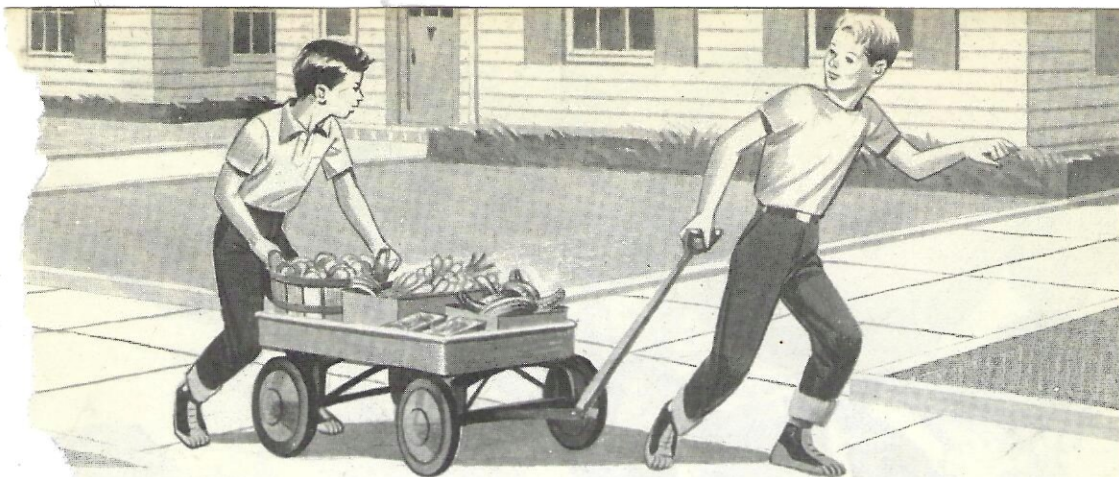
After you have worked a problem, it is wise to ask yourself this question, "Is my answer sensible?" In this way you can often decide whether your answer is about right or entirely wrong.

1. Harold had \$2.25. He spent 65 cents. How much money did he have left?

Marie worked this problem. Her answer was \$2.90. You can see at a glance that this would not be a sensible answer, for the question asks, "How much money did he have left?" Since Harold had only \$2.25 before he spent any of it, a sensible answer would be less than \$2.25. What was Marie's mistake?

Choose the sensible answer for each problem below. Then solve the problem.

2. During the summer Jack delivered groceries for his father. He earned \$7.50 each week. How much had he earned at the end of 4 weeks? (\$30, \$300)
3. Then Jack went to camp for one week. His expenses were \$17.50. How much money did he have left? (\$12.50, \$47.50)
4. For her birthday Mary received \$2.00 and spent one-fourth of it. How much did she spend? (\$8.00, \$.50)
5. In the fall, Henry's father and some of the neighbors asked him to rake leaves. Each one agreed to pay 60 cents for this work. If he helped 7 people in this way, how much money would he earn? (\$42, \$4.20)
6. One Saturday Frank earned 75 cents by cleaning the garage, 35 cents by scrubbing the porch, and 40 cents by running errands. How much did he earn altogether? (\$2.50, \$1.50)



Peter and Kenneth Sell Vegetables

Before you begin to solve a problem, always read it through carefully. Think about the problem and what it tells before you decide what to do.

Always check your answer to each question before you go on to the next problem. Ask yourself, "Have I answered the question which is asked in the problem?"

1. Peter and Kenneth raised some tomatoes in their own vegetable garden. They sold 28 pounds of tomatoes at 9 cents a pound. How much money did they receive?
2. One morning they gathered 84 green onions which they tied into bunches of 7 each. How many bunches did they have ready to sell?
3. They sold shelled lima beans to neighbors for 29 cents a quart. In the store lima beans sold for 40 cents a quart. How much less than the store price did they receive?
4. One week their sale of vegetables amounted to \$5.84, the next week \$2.70, then \$1.45, and then \$.95. What was the amount of their sales at the end of four weeks?
5. They charged a quarter for 5 cucumbers. This was how much for each cucumber? At this price, how much did they receive for 25 cucumbers?



LEARNING MORE ABOUT MULTIPLICATION

Cupcakes for a Halloween Party

Some children were having a Halloween party in the school gymnasium. They had 14 boxes of cupcakes to eat with their ice cream. In each box there were 12 cupcakes.

Nancy said, "We need 165 cakes. Did we order enough? Let's multiply to find how many we have."

This is the way they multiplied. Follow step by step.

A	B	C	D
12	12	12	12
<u>14</u>	<u>14</u>	<u>14</u>	<u>14</u>
	48	48	48
		<u>12</u>	<u>12</u>
			168

Study the example above as you read these directions:

1. Write 12. Then write 14 under the 12.
2. Multiply 12 by the 4 in ones' place. The product is 48.
3. Now multiply 12 by the 1 in tens' place.

You know that one 12 is 12. When you multiply a number by 1, the product is the same as the number.

Write 2 in tens' place, under the 1 that you are multiplying by, because you are multiplying by 1 ten. Write 1 to the left of the 2, in hundreds' place.

4. Now add. There were 168 cupcakes in the 14 boxes.

Multiplying with Two-Place Numbers

The school cafeteria ordered 24 boxes of canned fruit. There were 12 cans in each box. How many cans were there in the 24 boxes?

Here you multiply 12 by 24. Study the example at the right as you read these steps:

$$\begin{array}{r}
 12 \\
 24 \text{ multiplier} \\
 \hline
 48 \text{ partial product} \\
 24 \text{ partial product} \\
 \hline
 288 \text{ product}
 \end{array}$$

First, multiply 12 by 4. Think, four 2's are 8. Write the 8 in ones' place, under the 4 you are multiplying by. Now think, four 1's are 4. Where should you write the 4?

Next, multiply 12 by 2. Think, two 2's are 4. Write the 4 in tens' place, under the 2 you are multiplying by, because you are multiplying by 2 tens. Then think, two 1's are 2. Where should you write the 2?

Now you are ready to add. The product is 288.

There were 288 cans of fruit in the 24 boxes.

In this example, the multiplier is 24, which is 2 tens and 4 ones. When you multiply 12 by 4 ones, you get one part of the product, 48 ones, or 4 tens and 8 ones. This is called a **partial product**.

Then, when you multiply 12 by 2 tens, you get another **partial product**, 24 tens. This is 2 hundreds and 4 tens.

Now you add the 48 ones and 24 tens and get the final product, 288.

Copy and multiply. Check by multiplying again.

A	B	C	D	E	F
83	42	11	53	61	72
<u>12</u>	<u>23</u>	<u>47</u>	<u>23</u>	<u>26</u>	<u>41</u>

Carrying in Multiplication

The art teacher bought 36 packages of colored paper. There were 48 sheets in each package. How many sheets of paper were there in the 36 packages?

To find the total number of sheets bought, you multiply 48 by 36. This is done exactly as in the examples on pages 75 and 76, except that in this case you have to carry.

$$\begin{array}{r} 48 \\ 36 \\ \hline 288 \\ 144 \\ \hline 1728 \end{array}$$

Multiply 48 by 6. Think, six 8's are 48, and write 8 in ones' place. Carry the 4 tens. Think, six 4's are 24, and 4 are 28. Write the 8 in tens' place and the 2 in hundreds' place.

Now multiply 48 by the 3 in tens' place. Think, three 8's are 24. Where will you write the 4? Then three 4's are 12, and 2 are 14. Where do you write this number?

What was the first partial product? the second? You add these partial products to get the final product, 1728.

There were 1728 sheets of paper in the 36 packages.

Copy the examples below and multiply. Make sure you are right by multiplying again.

	A	B	C	D	E	F
1.	$\begin{array}{r} 39 \\ 34 \\ \hline \end{array}$	$\begin{array}{r} 37 \\ 86 \\ \hline \end{array}$	$\begin{array}{r} 79 \\ 72 \\ \hline \end{array}$	$\begin{array}{r} 49 \\ 59 \\ \hline \end{array}$	$\begin{array}{r} 56 \\ 48 \\ \hline \end{array}$	$\begin{array}{r} 76 \\ 39 \\ \hline \end{array}$
2.	$\begin{array}{r} 36 \\ 57 \\ \hline \end{array}$	$\begin{array}{r} 48 \\ 68 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ 53 \\ \hline \end{array}$	$\begin{array}{r} 65 \\ 26 \\ \hline \end{array}$	$\begin{array}{r} 79 \\ 58 \\ \hline \end{array}$	$\begin{array}{r} 29 \\ 86 \\ \hline \end{array}$

Checking in Another Way

Some pencils come in boxes of 12 each. How many pencils are there in 35 of these boxes?

This problem has been worked and checked. To check the work you multiply again, this time using 12 as the multiplier. You see that it does not matter whether you multiply 12 by 35 or 35 by 12. The product is the same.

Multiply	Check
12	35
35	12
<u>60</u>	<u>70</u>
36	35
<u>420</u>	<u>420</u>

There are 420 pencils in the 35 boxes.

Copy, multiply, and check as in the example above:

	A	B	C	D	E	F
1.	$\begin{array}{r} 24 \\ 63 \\ \hline \end{array}$	$\begin{array}{r} 26 \\ 71 \\ \hline \end{array}$	$\begin{array}{r} 35 \\ 24 \\ \hline \end{array}$	$\begin{array}{r} 42 \\ 85 \\ \hline \end{array}$	$\begin{array}{r} 58 \\ 35 \\ \hline \end{array}$	$\begin{array}{r} 35 \\ 96 \\ \hline \end{array}$
2.	$\begin{array}{r} 34 \\ 57 \\ \hline \end{array}$	$\begin{array}{r} 69 \\ 46 \\ \hline \end{array}$	$\begin{array}{r} 48 \\ 19 \\ \hline \end{array}$	$\begin{array}{r} 29 \\ 29 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ 78 \\ \hline \end{array}$	$\begin{array}{r} 78 \\ 84 \\ \hline \end{array}$
3.	$\begin{array}{r} 97 \\ 35 \\ \hline \end{array}$	$\begin{array}{r} 87 \\ 53 \\ \hline \end{array}$	$\begin{array}{r} 78 \\ 76 \\ \hline \end{array}$	$\begin{array}{r} 89 \\ 69 \\ \hline \end{array}$	$\begin{array}{r} 65 \\ 59 \\ \hline \end{array}$	$\begin{array}{r} 84 \\ 64 \\ \hline \end{array}$

KEEPING ON YOUR TOES

- How many quarters equal a dollar?
- How many inches are there in 3 feet?
- Edith had one yard of lace. She used 18 inches. How many inches of lace did she have left?
- Is the product the same in these two examples?
 18×37 37×18
- How many cents are there in 2 half-dollars?

Practice in Multiplication

Study Examples A, B, C, D, and E. Notice where the partial products are placed.

A	B	C	D	E
72	65	34	57	48
<u>46</u>	<u>34</u>	<u>57</u>	<u>17</u>	<u>32</u>
432	260	238	399	96
<u>288</u>	<u>195</u>	<u>170</u>	<u>57</u>	<u>144</u>
3312	2210	1938	969	1536

Now copy each example without the work. Close your book and multiply. When you have finished, open your book and compare your work with that above. Correct any mistakes you have made.

Copy the examples below and multiply. Check your work by multiplying again, this time using the top number as the multiplier. To check the first example, you will multiply 19 by 37.

	A	B	C	D	E	F
1.	37 <u>19</u>	76 <u>68</u>	89 <u>47</u>	45 <u>36</u>	74 <u>52</u>	12 <u>69</u>
2.	62 <u>57</u>	46 <u>94</u>	53 <u>87</u>	24 <u>84</u>	58 <u>25</u>	89 <u>93</u>
3.	76 <u>43</u>	39 <u>56</u>	47 <u>87</u>	39 <u>32</u>	78 <u>56</u>	98 <u>48</u>
4.	58 <u>79</u>	86 <u>63</u>	69 <u>25</u>	54 <u>56</u>	35 <u>48</u>	69 <u>97</u>

Multiplying by 10

1. When Robert had saved 10 nickels, he found it was easy to tell how much money he had saved. He knew how to multiply by 10. Ten 5's are 50; ten nickels equal fifty cents.
2. Write the number, 4, ten times and add. By adding, you see that ten 4's = 40; $10 \times 4 = 40$.
3. How many 3's would you have to add to get 30?
4. The example 10×7 means ten 7's. The product is 70. Explain Examples 5-10 below in this way.
5. $10 \times 6 = ?$ 7. $10 \times 4 = ?$ 9. $10 \times 8 = ?$
6. $10 \times 1 = ?$ 8. $10 \times 5 = ?$ 10. $10 \times 9 = ?$
11. Ten 2's are how many? Writing a zero after the 2 is the same as multiplying 2 by 10.

To multiply a number by 10, place a zero after the number.

Give the products for Examples 5-10 using this short cut.

The example 10×18 means ten 18's. The product is 180. Give the products for Examples 12-17 below and tell what each example means.

12. $10 \times 12 = ?$ 14. $10 \times 25 = ?$ 16. $10 \times 14 = ?$
13. $10 \times 36 = ?$ 15. $10 \times 42 = ?$ 17. $10 \times 53 = ?$
18. What is the cost of 10 tickets at 28 cents each?
19. What is the cost of 10 books at 98 cents each?
20. If Henry sells magazines for 15 cents each, how much will he receive for 10 magazines?
21. Gertrude bought 10 favors for her party at 10 cents each. How much did she pay for all the favors?
22. How many are ten 17's? ten 35's? ten 50's?

Multipliers Ending in Zero

A grocer ordered 40 crates of fresh strawberries for his market. There were 24 boxes in each crate. How many boxes of strawberries were there?

To find the answer to the question asked in the problem, multiply 24 by 40. It is just as easy to multiply by 40 as it is to multiply by 4. When the multiplier is 40, we are multiplying by 4 tens.

$$\begin{array}{r} 24 \\ \times 40 \\ \hline 960 \end{array}$$

The zero in ones' place in the multiplier shows that there are no ones by which to multiply. We write 0 in ones' place in the product. Then we multiply 24 by the 4 in tens' place. We write 96 to the left of the 0. Do you see why we must write a zero in the product before we write the 96?

How many boxes of berries did the grocer have?

Copy the following examples and find the products:

	A	B	C	D	E	F
1.	$\begin{array}{r} 45 \\ \times 20 \\ \hline \end{array}$	$\begin{array}{r} 82 \\ \times 50 \\ \hline \end{array}$	$\begin{array}{r} 53 \\ \times 60 \\ \hline \end{array}$	$\begin{array}{r} 67 \\ \times 40 \\ \hline \end{array}$	$\begin{array}{r} 94 \\ \times 30 \\ \hline \end{array}$	$\begin{array}{r} 35 \\ \times 90 \\ \hline \end{array}$
2.	$\begin{array}{r} 38 \\ \times 70 \\ \hline \end{array}$	$\begin{array}{r} 46 \\ \times 60 \\ \hline \end{array}$	$\begin{array}{r} 74 \\ \times 50 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ \times 90 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ \times 20 \\ \hline \end{array}$	$\begin{array}{r} 46 \\ \times 80 \\ \hline \end{array}$
3.	$\begin{array}{r} 39 \\ \times 40 \\ \hline \end{array}$	$\begin{array}{r} 74 \\ \times 70 \\ \hline \end{array}$	$\begin{array}{r} 59 \\ \times 80 \\ \hline \end{array}$	$\begin{array}{r} 45 \\ \times 10 \\ \hline \end{array}$	$\begin{array}{r} 58 \\ \times 30 \\ \hline \end{array}$	$\begin{array}{r} 84 \\ \times 40 \\ \hline \end{array}$
4.	$\begin{array}{r} 89 \\ \times 10 \\ \hline \end{array}$	$\begin{array}{r} 78 \\ \times 60 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ \times 90 \\ \hline \end{array}$	$\begin{array}{r} 56 \\ \times 70 \\ \hline \end{array}$	$\begin{array}{r} 65 \\ \times 50 \\ \hline \end{array}$	$\begin{array}{r} 76 \\ \times 20 \\ \hline \end{array}$



Several groups of children in Lincoln School enjoyed singing folk songs. Many of their favorite songs were in a music book that cost \$.65. Thirty of the children bought books so that they could play and sing the songs at home. John collected the money for the books. How much did he collect?

First write 0 in ones' place in the product. \$.65
 Then multiply by the 3 in tens' place just as 30
 you always multiply. \$19.50

Place the point and the dollar sign in the product to show that it is dollars and cents. There must be two places for cents at the right of the point.

Copy the examples below and multiply:

	A	B	C	D	E	F
5.	\$.15	\$.67	\$.18	\$.29	\$.39	\$.18
	<u>10</u>	<u>30</u>	<u>40</u>	<u>70</u>	<u>50</u>	<u>90</u>
6.	\$.45	\$.21	\$.78	\$.27	\$.23	\$.27
	<u>40</u>	<u>30</u>	<u>80</u>	<u>60</u>	<u>40</u>	<u>90</u>
7.	\$.23	\$.34	\$.23	\$.59	\$.56	\$.89
	<u>80</u>	<u>90</u>	<u>20</u>	<u>90</u>	<u>70</u>	<u>60</u>

Finding Averages

Each week Dan saves some money from his allowance and from other money that he earns. One week he saved \$.30, the next week, \$.40, then \$.25, and the fourth week \$.45. What was the average amount saved in a week?

You can see that Dan didn't save the same amount each week. Some weeks he saved more; some weeks he saved less. The **average amount** is the amount he would have saved per week, if he had saved the same amount every week.

To find the average amount, you first add to find the total amount of Dan's savings. He saved \$1.40. Then, you divide the total amount by the number of weeks he saved. The average amount Dan saved was \$.35.

\$.30		\$.35
.40	4)	\$1.40
.25		1 2
.45		20
<u>\$1.40</u>		<u>20</u>

Read these problems and find the answers:

1. One group of children in Lincoln School had a flower sale. They decided to spend the money which they received to buy 4 new books for the school library. The books they selected cost \$2.50, \$2.00, \$3.00, and \$1.50. How much did the books cost? What was the average price of the books?
2. Alice practiced the piano 40 minutes on Monday, 35 minutes on Tuesday, 40 minutes on Wednesday, 25 minutes on Thursday, and 35 minutes on Friday. How many minutes did she practice during the week? How many minutes of practice did she average for the five days?
3. In the fall a group of boys took hikes on 3 Saturdays. The first Saturday they walked 5 miles, the next 7 miles, and the third they took a long hike of 9 miles. How many miles did they average on these hikes?

Finding and Using Averages

You will find that in some problems in which you are to find the average, the total amount is given. In a problem of this kind, you need only divide to find the average.

Read the problems below carefully and find the answers to the questions asked.

1. Mr. Scott, who has a kennel, sold 18 cocker spaniel puppies in 3 weeks. What was the average number sold per week?
2. Jim's uncle drove 384 miles in 8 hours. What was his average speed per hour?
3. Six Boy Scouts found that their total weight was 528 pounds. What was the average weight of the boys?
4. When Jean visited her grandmother in the country, she gathered 282 eggs in 6 days. What was the average number she gathered per day?
5. Mr. Crosby's car averages 15 miles on a gallon of gasoline. How far will it travel on 5 gallons of gasoline?
6. The librarian in Greene School reported that pupils borrowed an average of 352 books per day. How many books were borrowed in 5 days?
7. One polar bear in the zoo weighs 800 pounds; another weighs 750 pounds; and a third weighs 1,000 pounds. What is the average weight of the bears?
8. Find the average of 3, 4, 5, 6, 7.
9. What is the average of 12, 16, 15, and 13?
10. Find the average of 89, 98, 92, 90, and 86.
11. What is the average of 159, 165, and 150?
12. Find the average of 97, 103, 105, and 99.



The School Library

If Miss Perry found that the sections of the shelves in the library at Washington School held an average of 125 books each, how many books would 26 sections hold?

First, multiply 125 by the 6 in ones' place. 125
 Then multiply 125 by the 2 in tens' place. 26
 Add the partial products. 750

There are 3,250 books in the 26 sections of the bookshelves. 250
3250

► In this example there are more figures in the top number than in the multiplier. To check your work in such an example, it will be easier to multiply again, using the same number as the multiplier, than to use the larger number as the multiplier.

Copy the following examples. Multiply and check.

	A	B	C	D	E	F
1.	<u>624</u> 37	<u>153</u> 45	<u>375</u> 16	<u>418</u> 28	<u>496</u> 19	<u>829</u> 48
2.	<u>395</u> 73	<u>246</u> 56	<u>897</u> 54	<u>389</u> 76	<u>841</u> 93	<u>674</u> 74
3.	<u>325</u> 39	<u>523</u> 28	<u>435</u> 45	<u>857</u> 79	<u>679</u> 38	<u>967</u> 62

Multiplying Money

1. If one child's ticket to the pet show costs 25 cents, how much will the tickets for 27 children cost?

Write 25 cents this way: \$.25. Then multiply, just as you always multiply whole numbers.

$$\begin{array}{r} .25 \\ 27 \\ \hline 175 \\ 50 \\ \hline \$6.75 \end{array}$$

► There must be a point and a dollar sign in the product to show that it is dollars and cents.

The 27 tickets will cost \$6.75.

2. During the summer Donald earns \$6.50 a week. How much does he earn in 12 weeks?

Multiply \$6.50 by 12. First multiply \$6.50 by the 2 in ones' place. Then multiply by the 1 in tens' place. Add the partial products. There must be two places at the right of the point for cents. Write the dollar sign.

$$\begin{array}{r} \$6.50 \\ 12 \\ \hline 13\ 00 \\ 65\ 0 \\ \hline \$78.00 \end{array}$$

Donald earns \$78.00 in 12 weeks.

Copy and multiply. Check by multiplying again.

	A	B	C	D	E
3.	$\begin{array}{r} \$.86 \\ 37 \\ \hline \end{array}$	$\begin{array}{r} \$.70 \\ 52 \\ \hline \end{array}$	$\begin{array}{r} \$.68 \\ 46 \\ \hline \end{array}$	$\begin{array}{r} \$.53 \\ 89 \\ \hline \end{array}$	$\begin{array}{r} \$.89 \\ 29 \\ \hline \end{array}$
4.	$\begin{array}{r} \$ 1.26 \\ 95 \\ \hline \end{array}$	$\begin{array}{r} \$ 4.70 \\ 84 \\ \hline \end{array}$	$\begin{array}{r} \$ 4.90 \\ 73 \\ \hline \end{array}$	$\begin{array}{r} \$ 6.89 \\ 85 \\ \hline \end{array}$	$\begin{array}{r} \$ 5.70 \\ 36 \\ \hline \end{array}$
5.	$\begin{array}{r} \$ 4.79 \\ 69 \\ \hline \end{array}$	$\begin{array}{r} \$ 5.43 \\ 54 \\ \hline \end{array}$	$\begin{array}{r} \$ 3.28 \\ 86 \\ \hline \end{array}$	$\begin{array}{r} \$ 6.37 \\ 97 \\ \hline \end{array}$	$\begin{array}{r} \$ 4.87 \\ 75 \\ \hline \end{array}$
6.	$\begin{array}{r} \$ 2.69 \\ 34 \\ \hline \end{array}$	$\begin{array}{r} \$ 5.42 \\ 96 \\ \hline \end{array}$	$\begin{array}{r} \$ 1.46 \\ 28 \\ \hline \end{array}$	$\begin{array}{r} \$ 9.35 \\ 57 \\ \hline \end{array}$	$\begin{array}{r} \$ 7.29 \\ 48 \\ \hline \end{array}$

Number Words

January 1, or New Year's Day, is the **first** day of the New Year. January has 31 days. The last day of the month is the **thirty-first** day of January.

When we count we use the number words one, two, three, four, five, and so on. But we also use number words to show the order in which things follow one another. Then we say, first, second, third, fourth, fifth, and so on. For example, "Kenneth is in the **fifth** grade," or "Jane's birthday comes on the **third** of June."

January						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

1. The words for most of the thirty-one numbers shown on the calendar are given below. Read these number words. Then write the number words from twenty-first to thirtieth.

first	seventh	thirteenth	nineteenth
second	eighth	fourteenth	twentieth
third	ninth	fifteenth	twenty-first
fourth	tenth	sixteenth	...
fifth	eleventh	seventeenth	thirtieth
sixth	twelfth	eighteenth	thirty-first

Read these problems and write the answers:

- How many floors are there from the seventh to the twenty-fifth floor of an office building?
- How many years older is Jim on his tenth birthday than he was on his fourth birthday?
- Alice's birthday is the twenty-second day of October. Nancy's birthday is 8 days later. What is the date of Nancy's birthday?



Dates We Celebrate

Copy the following sentences and write the missing word or words. Look at page 87 if you need help with the words.

If you are not sure of all the dates, look them up on a calendar or in a book.

1. Labor Day is the ? Monday in September.
2. Columbus Day is the ? of October.
3. Halloween is the ? of October.
4. Thanksgiving is the ? Thursday of November.
5. Christmas comes on the ? of December.
6. St. Valentine's Day is the ? of February.
7. The ? of February is George Washington's birthday.
8. St. Patrick's Day is the ? of March.
9. Independence Day is on July ?.
10. My birthday is the ? of ?.

Make 5 sentences of your own, using the numbers first, second, third, and so on. Use any number you see on the calendar at the top of page 87.

Zeros in Multiplication

1. A truck farmer sold 70 bushels of potatoes. Each bushel weighed 60 pounds. How many pounds of potatoes did he sell?

To find the total amount you multiply 60 by 70. In this example there is a zero in ones' place in both numbers. Since there is nothing in ones' place by which to multiply, write zero in ones' place in the product.

$$\begin{array}{r} 60 \\ 70 \\ \hline 4200 \end{array}$$

Then multiply by the 7 in tens' place. The zero in the top number shows that there are no ones to multiply. Write 0 in tens' place in the product, under the 7 you are multiplying by. Seven 6's are 42. Write the 2 in hundreds' place and the 4 in thousands' place. The product is 4200.

2. Here there is a zero in tens' place in the top number and a zero in ones' place in the multiplier. First write 0 in ones' place in the product. Then multiply 302 by the 3 in tens' place.

$$\begin{array}{r} 302 \\ 30 \\ \hline 9060 \end{array}$$

3. The example at the right is similar to Example 2. Since there is a zero in ones' place in the multiplier, what should you write in ones' place in the product?

$$\begin{array}{r} 107 \\ 50 \\ \hline 5350 \end{array}$$

Then think, five 7's are 35. Write 5 in tens' place and carry 3 hundreds. The zero shows that there is nothing in tens' place to multiply, but you carried 3 hundreds. Write 3 in hundreds' place. Five 1's are 5. Write 5 in thousands' place.

4. First write 0 in one's place in the product. Then write 0 in tens' place and again in hundreds' place. Why? Then think, six 3's are 18. Write the 18.

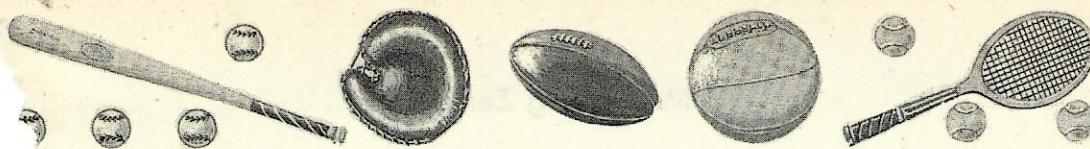
$$\begin{array}{r} 300 \\ 60 \\ \hline 18,000 \end{array}$$

Practice with Zeros

The examples on this page are like the examples on page 89. Study that page again if you need help.

	A	B	C	D	E	F
1.	$\begin{array}{r} 70 \\ 50 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ 80 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ 40 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ 70 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ 90 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ 60 \\ \hline \end{array}$
2.	$\begin{array}{r} 620 \\ 30 \\ \hline \end{array}$	$\begin{array}{r} 840 \\ 20 \\ \hline \end{array}$	$\begin{array}{r} 310 \\ 70 \\ \hline \end{array}$	$\begin{array}{r} 430 \\ 30 \\ \hline \end{array}$	$\begin{array}{r} 620 \\ 40 \\ \hline \end{array}$	$\begin{array}{r} 780 \\ 10 \\ \hline \end{array}$
3.	$\begin{array}{r} 450 \\ 40 \\ \hline \end{array}$	$\begin{array}{r} 570 \\ 30 \\ \hline \end{array}$	$\begin{array}{r} 260 \\ 70 \\ \hline \end{array}$	$\begin{array}{r} 510 \\ 80 \\ \hline \end{array}$	$\begin{array}{r} 680 \\ 50 \\ \hline \end{array}$	$\begin{array}{r} 940 \\ 60 \\ \hline \end{array}$
4.	$\begin{array}{r} 305 \\ 40 \\ \hline \end{array}$	$\begin{array}{r} 403 \\ 90 \\ \hline \end{array}$	$\begin{array}{r} 208 \\ 50 \\ \hline \end{array}$	$\begin{array}{r} 409 \\ 60 \\ \hline \end{array}$	$\begin{array}{r} 807 \\ 80 \\ \hline \end{array}$	$\begin{array}{r} 608 \\ 30 \\ \hline \end{array}$
5.	$\begin{array}{r} 700 \\ 20 \\ \hline \end{array}$	$\begin{array}{r} 500 \\ 70 \\ \hline \end{array}$	$\begin{array}{r} 600 \\ 90 \\ \hline \end{array}$	$\begin{array}{r} 400 \\ 60 \\ \hline \end{array}$	$\begin{array}{r} 900 \\ 40 \\ \hline \end{array}$	$\begin{array}{r} 600 \\ 80 \\ \hline \end{array}$

- What is the cost of 10 rolls of film at 35 cents a roll?
- A clerk in Post's Bookstore sold 60 copies of a book that was priced at \$2.50. What was the total amount received for the 60 copies?
- In Mr. Scott's orange grove there are 40 rows of trees. There are 30 trees in each row. How many orange trees does he have?
- Grocers often buy potatoes in 100-pound bags. How much do 50 of these bags weigh?



Arithmetic in the Sport Shop

1. Gordon's Sport Shop sold 300 baseballs at \$1.35 each. How much was received for the balls?

To find the answer, you multiply \$1.35 by 300. You see that there are two 0's in the multiplier. Write two 0's in the product. Then multiply by the 3.

$$\begin{array}{r} \$1.35 \\ 300 \\ \hline \$405.00 \end{array}$$

Write the point and the dollar sign in the product to show that it means dollars and cents. How many places for cents are there at the right of the point?

2. The same shop also sold 200 tennis rackets at \$3.90 each. How much was received for the tennis rackets?

$$\begin{array}{r} \$3.90 \\ 200 \\ \hline \$780.00 \end{array}$$

How many 0's must you first write in the product? Then multiply by the 2. How do you make the product read dollars and cents?

3. The sport shop also sold 400 baseball bats at \$2.00 each. How much was received for the bats?

$$\begin{array}{r} \$2.00 \\ 400 \\ \hline \$800.00 \end{array}$$

How many 0's must you write in the product before you multiply by the 4? When you multiply by the 4, you must write two more zeros before you write the 8. Why?

Copy, multiply, and check:

	A	B	C	D	E	F
4.	$\begin{array}{r} 246 \\ 300 \\ \hline \end{array}$	$\begin{array}{r} 147 \\ 500 \\ \hline \end{array}$	$\begin{array}{r} \$5.81 \\ 400 \\ \hline \end{array}$	$\begin{array}{r} \$6.48 \\ 600 \\ \hline \end{array}$	$\begin{array}{r} \$2.46 \\ 800 \\ \hline \end{array}$	$\begin{array}{r} 920 \\ 700 \\ \hline \end{array}$
5.	$\begin{array}{r} 430 \\ 900 \\ \hline \end{array}$	$\begin{array}{r} \$6.80 \\ 200 \\ \hline \end{array}$	$\begin{array}{r} \$6.90 \\ 400 \\ \hline \end{array}$	$\begin{array}{r} 900 \\ 500 \\ \hline \end{array}$	$\begin{array}{r} \$7.00 \\ 300 \\ \hline \end{array}$	$\begin{array}{r} \$8.00 \\ 800 \\ \hline \end{array}$

Multiplying Zeros

1. A lake steamer makes a trip of 206 miles each day. How many miles does it travel in 28 days? $28 \times 206 = ?$

Think, eight 6's are 48. Write 8 in ones' place and carry 4 tens. The zero shows that there is nothing in tens' place to multiply, but you carried 4 tens. Write the 4 in tens' place. Eight 2's are 16. Write the 6 in hundreds' place and the 1 in thousands' place.

$$\begin{array}{r} 206 \\ 28 \\ \hline 1648 \\ 412 \\ \hline 5768 \end{array}$$

Now multiply by the 2 in tens' place in exactly the same way, but write the first figure of the partial product in tens' place, under the 2 in the multiplier. Add the partial products.

The lake steamer travels 5,768 miles in 28 days.

2. If one ship can carry 300 passengers on each trip, how many passengers can it carry on 14 trips? $14 \times 300 = ?$

In this example there are no ones in ones' place or tens in tens' place in the top number. Write 0 in both ones' and tens' place in the partial product. Then think, four 3's are 12. Where do you write the 2? the 1?

$$\begin{array}{r} 300 \\ 14 \\ \hline 1200 \\ 300 \\ \hline 4200 \end{array}$$

Now multiply by the 1 in tens' place. What is the final product?

3. Another ship can carry 400 passengers on each trip. How many passengers can it carry on 25 trips?

Multiply, and check by multiplying again:

	A	B	C	D	E	F
4.	604	708	809	506	708	407
	<u>35</u>	<u>26</u>	<u>39</u>	<u>67</u>	<u>58</u>	<u>94</u>
5.	400	900	500	600	700	900
	<u>76</u>	<u>58</u>	<u>82</u>	<u>49</u>	<u>37</u>	<u>76</u>



Is My Answer Sensible?

Before Christmas, Berry's Toy Shop sold 20 dolls at \$2.98 each. How much was received for these dolls?

Let us look at Joan's work. Has she multiplied correctly? Is her answer sensible?

JOAN	FRANK
\$2.98	\$2.98
20	20
\$59.60	\$5.96

Now look at Frank's work. The problem tells us that one doll sold for \$2.98 or almost \$3.00. What is 20×3 dollars? How could Frank tell that his answer was not sensible? Did he find the cost of 20 dolls or 2 dolls?

You see there is a zero in ones' place in the multiplier. That means Frank should have written 0 in ones' place in the product, before he multiplied by the 2 in tens' place.

Solve the following problems. Make sure that each answer is a sensible one.

1. In one week the clerk in Berry's Toy Shop also sold 30 small sailboats at \$1.49 each. How much was received for these boats?
2. Large picture books sold for 80 cents apiece. The Woman's Club bought 60 of these to send to children in hospitals. How much did they pay for the 60 books?
3. Toy airplanes were for sale at 29 cents each. How much did Mrs. Ames pay for 40 of these airplanes for a Christmas party?
4. Some mechanical toys were priced at \$1.79 each. How much would Mr. Berry receive for 50 of these toys?
5. Mr. Berry bought 200 toy animals at \$1.09 apiece. How much did he pay for all the animals?
6. He also bought 300 games at a cost of \$1.98 each. What was the total cost of the games?

Multiplying Larger Numbers

Study the example at the right. Here you are multiplying a larger number than you have multiplied before. You see that you multiply just as you always do.

$$\begin{array}{r} 4075 \\ 26 \\ \hline 24450 \\ 8150 \\ \hline 105,950 \end{array}$$

Copy the examples below and multiply. Check your work by multiplying again.

A	B	C	D	E
1. $\begin{array}{r} 3468 \\ 39 \\ \hline \end{array}$	$\begin{array}{r} 3980 \\ 46 \\ \hline \end{array}$	$\begin{array}{r} 2905 \\ 75 \\ \hline \end{array}$	$\begin{array}{r} 2149 \\ 29 \\ \hline \end{array}$	$\begin{array}{r} 1458 \\ 48 \\ \hline \end{array}$
2. $\begin{array}{r} 7360 \\ 57 \\ \hline \end{array}$	$\begin{array}{r} 9075 \\ 43 \\ \hline \end{array}$	$\begin{array}{r} 1408 \\ 87 \\ \hline \end{array}$	$\begin{array}{r} 6050 \\ 96 \\ \hline \end{array}$	$\begin{array}{r} 5300 \\ 28 \\ \hline \end{array}$
3. $\begin{array}{r} 2670 \\ 60 \\ \hline \end{array}$	$\begin{array}{r} 3287 \\ 90 \\ \hline \end{array}$	$\begin{array}{r} 2069 \\ 80 \\ \hline \end{array}$	$\begin{array}{r} 5408 \\ 50 \\ \hline \end{array}$	$\begin{array}{r} 7000 \\ 800 \\ \hline \end{array}$

Keeping in Practice

Copy and work the examples below. Do what the signs tell you.

1. $\begin{array}{r} 600 \\ - 289 \\ \hline \end{array}$	2. $\begin{array}{r} 67 \\ \times 40 \\ \hline \end{array}$	3. $\begin{array}{r} 76 \\ \times 57 \\ \hline \end{array}$	4. $\begin{array}{r} \$20.10 \\ - 12.65 \\ \hline \end{array}$	5. $\begin{array}{r} \$3.25 \\ \times 16 \\ \hline \end{array}$
--	---	---	--	---

6. $3625 \div 6 = ?$

12. $325 + 78 + 9 = ?$

7. $6 \times 8407 = ?$

13. $6418 \div 8 = ?$

8. $7852 - 988 = ?$

14. $28 + 16 + 45 + 92 = ?$

9. $\frac{1}{5}$ of 40 = ?

15. $\frac{1}{7}$ of 42 = ?

10. $\frac{1}{8}$ of 56 = ?

16. $\frac{1}{9}$ of 72 = ?

11. $\frac{1}{6}$ of 36 = ?

17. $\frac{1}{4}$ of 28 = ?



Using Three-Place Multipliers

Richard's father bought 124 cases of eggs for his grocery store. There are 144 eggs in each case. How many eggs did he buy?

To find the answer you have to multiply 144 by 124.

You know that the number 124 means $100 + 20 + 4$. To find the product of 124×144 you could multiply by 4, then by 20, and then by 100, as shown in the work at the left, below.

The product of 4×144 is	576	144
The product of 20×144 is	2,880	124
The product of 100×144 is	14,400	576
The final product is	17,856	288
		144
		17,856

Study the example at the right, above. You see that when you multiply by the 2 in tens' place, you are really multiplying by 2 tens, or 20. You write the first figure of this partial product in tens' place. The 288 means 2,880 but it is not necessary to write the 0.

When you multiply by the 1 in hundreds' place, you are really multiplying by 1 hundred, or 100. Does the 144 mean 14,400?

Add the partial products. The final product is 17,856.

Copy the examples below, multiply, and check:

1. $216 \times 165 = ?$
2. $418 \times 462 = ?$
3. $739 \times 651 = ?$
4. $576 \times 327 = ?$

Practice with Three-Place Multipliers

Copy the examples below and multiply. Check your work by using the top number as the multiplier. To check Example 1A, multiply 423 by 384.

Set I

	A	B	C	D	E	F
1.	$\begin{array}{r} 384 \\ 423 \\ \hline \end{array}$	$\begin{array}{r} 521 \\ 516 \\ \hline \end{array}$	$\begin{array}{r} 762 \\ 237 \\ \hline \end{array}$	$\begin{array}{r} 489 \\ 567 \\ \hline \end{array}$	$\begin{array}{r} 463 \\ 819 \\ \hline \end{array}$	$\begin{array}{r} 729 \\ 489 \\ \hline \end{array}$
2.	$\begin{array}{r} 278 \\ 735 \\ \hline \end{array}$	$\begin{array}{r} 135 \\ 587 \\ \hline \end{array}$	$\begin{array}{r} 237 \\ 596 \\ \hline \end{array}$	$\begin{array}{r} 697 \\ 465 \\ \hline \end{array}$	$\begin{array}{r} 654 \\ 984 \\ \hline \end{array}$	$\begin{array}{r} 850 \\ 965 \\ \hline \end{array}$
3.	$\begin{array}{r} 201 \\ 324 \\ \hline \end{array}$	$\begin{array}{r} 403 \\ 213 \\ \hline \end{array}$	$\begin{array}{r} 506 \\ 462 \\ \hline \end{array}$	$\begin{array}{r} 309 \\ 657 \\ \hline \end{array}$	$\begin{array}{r} 608 \\ 578 \\ \hline \end{array}$	$\begin{array}{r} 408 \\ 649 \\ \hline \end{array}$
4.	$\begin{array}{r} 380 \\ 234 \\ \hline \end{array}$	$\begin{array}{r} 470 \\ 516 \\ \hline \end{array}$	$\begin{array}{r} 950 \\ 329 \\ \hline \end{array}$	$\begin{array}{r} 560 \\ 371 \\ \hline \end{array}$	$\begin{array}{r} 750 \\ 842 \\ \hline \end{array}$	$\begin{array}{r} 490 \\ 489 \\ \hline \end{array}$

Set II

1.	$\begin{array}{r} 325 \\ 600 \\ \hline \end{array}$	$\begin{array}{r} 936 \\ 400 \\ \hline \end{array}$	$\begin{array}{r} 951 \\ 700 \\ \hline \end{array}$	$\begin{array}{r} 754 \\ 800 \\ \hline \end{array}$	$\begin{array}{r} 637 \\ 900 \\ \hline \end{array}$	$\begin{array}{r} 749 \\ 500 \\ \hline \end{array}$
2.	$\begin{array}{r} 285 \\ 340 \\ \hline \end{array}$	$\begin{array}{r} 479 \\ 290 \\ \hline \end{array}$	$\begin{array}{r} 834 \\ 760 \\ \hline \end{array}$	$\begin{array}{r} 531 \\ 580 \\ \hline \end{array}$	$\begin{array}{r} 647 \\ 460 \\ \hline \end{array}$	$\begin{array}{r} 756 \\ 370 \\ \hline \end{array}$
3.	$\begin{array}{r} 620 \\ 600 \\ \hline \end{array}$	$\begin{array}{r} 9400 \\ 300 \\ \hline \end{array}$	$\begin{array}{r} 750 \\ 500 \\ \hline \end{array}$	$\begin{array}{r} 870 \\ 800 \\ \hline \end{array}$	$\begin{array}{r} 690 \\ 600 \\ \hline \end{array}$	$\begin{array}{r} 8100 \\ 900 \\ \hline \end{array}$
4.	$\begin{array}{r} 579 \\ 690 \\ \hline \end{array}$	$\begin{array}{r} 986 \\ 480 \\ \hline \end{array}$	$\begin{array}{r} 890 \\ 210 \\ \hline \end{array}$	$\begin{array}{r} 608 \\ 970 \\ \hline \end{array}$	$\begin{array}{r} 320 \\ 789 \\ \hline \end{array}$	$\begin{array}{r} 869 \\ 580 \\ \hline \end{array}$

A New Step in Multiplication

Mr. Shaw, a wholesale fish dealer, sold 105 bushels of large clams for \$4.25 a bushel. How much did he receive for the clams?

To find the answer, multiply \$4.25 by 105.

\$4.25
105
21 25
425
\$446.25

The product of $5 \times \$4.25$ is \$ 21.25

The product of $100 \times \$4.25$ is 425.00

The final product is \$446.25

Read the work that is shown at the left, above. Then study the example at the right as you read these directions:

First, multiply by the 5 in ones' place. Since there is a zero in tens' place in the multiplier, you multiply next by the 1 in hundreds' place. In this partial product the first figure, 5, must be written directly under the 1 in the multiplier, since you are multiplying by 1 hundred. Add, to find the final product.

Mr. Shaw received \$446.25 for the clams.

Copy and multiply. Check your work.

	A	B	C	D	E	F
1.	$\begin{array}{r} 348 \\ 305 \\ \hline \end{array}$	$\begin{array}{r} 325 \\ 208 \\ \hline \end{array}$	$\begin{array}{r} 629 \\ 407 \\ \hline \end{array}$	$\begin{array}{r} \$7.15 \\ 309 \\ \hline \end{array}$	$\begin{array}{r} \$4.35 \\ 604 \\ \hline \end{array}$	$\begin{array}{r} \$9.26 \\ 103 \\ \hline \end{array}$
2.	$\begin{array}{r} \$4.70 \\ 207 \\ \hline \end{array}$	$\begin{array}{r} \$8.60 \\ 603 \\ \hline \end{array}$	$\begin{array}{r} \$7.20 \\ 405 \\ \hline \end{array}$	$\begin{array}{r} 840 \\ 708 \\ \hline \end{array}$	$\begin{array}{r} 590 \\ 501 \\ \hline \end{array}$	$\begin{array}{r} 790 \\ 806 \\ \hline \end{array}$
3.	$\begin{array}{r} 900 \\ 402 \\ \hline \end{array}$	$\begin{array}{r} \$6.00 \\ 905 \\ \hline \end{array}$	$\begin{array}{r} \$7.00 \\ 509 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ 406 \\ \hline \end{array}$	$\begin{array}{r} 600 \\ 809 \\ \hline \end{array}$	$\begin{array}{r} \$9.00 \\ 903 \\ \hline \end{array}$

Learning to Estimate Answers

Before you solve a problem, you may be able to tell about what the answer should be. When you think what an answer probably is, you **estimate the answer**.

1. In three days John's father drove 498 miles, 312 miles, and 107 miles. How many miles did he drive altogether?

Here is one way to estimate the answer to this problem. The number 498 is almost 500, 312 is about 300, and 107 is about 100.

$$500 + 300 + 100 = 900.$$

The estimated answer is 900; the exact sum is 917. Compare the two answers.

$$\begin{array}{r} 498 \\ 312 \\ 107 \\ \hline 917 \end{array}$$

2. By air it is 292 miles from New York to Buffalo, and 511 miles from New York to Detroit. How much greater is the distance to Detroit?

It is easy to estimate the answer to this problem. You know at once that it is about 200, for 511 is about 500, and 292 is almost 300. How does the estimated answer compare with the exact answer?

$$\begin{array}{r} 511 \\ 292 \\ \hline 219 \end{array}$$

3. Study the example at the right.

You know that \$4.98 is almost \$5.00, and that 6 times \$5.00 equals \$30.00. Is this a sensible estimate? How does this estimate compare with the exact answer?

$$\begin{array}{r} \$4.98 \\ \times 6 \\ \hline \$29.88 \end{array}$$

4. In the example at the right, you see that the dividend, \$19.95, is about \$20.00. Then you think, $20 \div 5 = 4$. The estimated answer is \$4.00. How does this estimate compare with the real quotient?

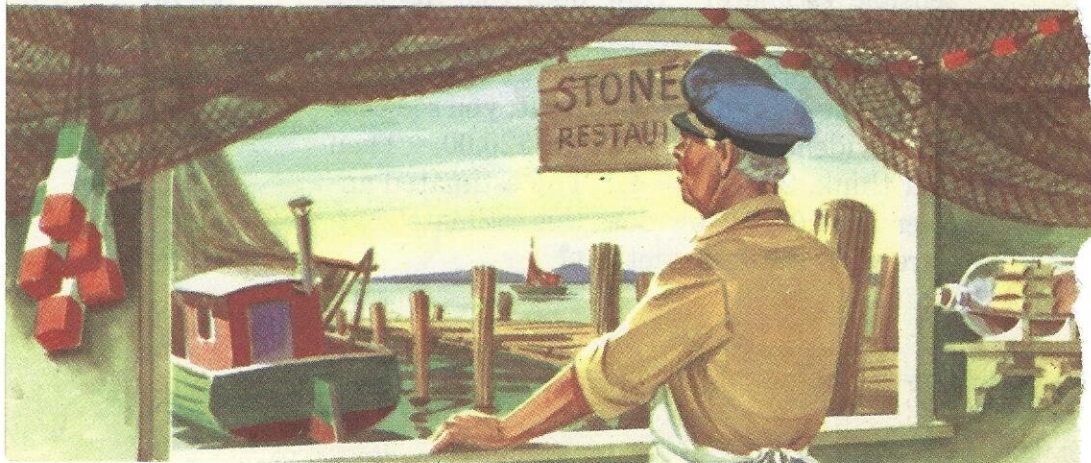
$$\begin{array}{r} \$3.99 \\ 5 \overline{) \$19.95} \\ \underline{15} \\ 49 \\ \underline{45} \\ 45 \\ \underline{45} \end{array}$$

Study each example carefully. Select the best answer of the three given at the right. Then check by working the example.

5. $3 \times 289 = ?$ (600; 900; 1000)
6. $548 + 194 = ?$ (800; 600; 750)
7. $695 - 375 = ?$ (300; 900; 200)
8. $30 \times 32 = ?$ (600; 1200; 900)
9. $664 \div 8 = ?$ (70; 80; 90)
10. $4989 - 2012 = ?$ (2000; 6000; 3000)
11. $275 + 98 + 112 = ?$ (300; 500; 400)

Read each of the problems below. Copy the estimate which you think is best. Check by solving the problem.

12. Stone's Restaurant paid \$20.60 for 4 bushels of clams. If the clams were all the same price, how much did each bushel cost? (\$4.00; \$5.00; \$3.00)
13. One day Mr. Stone bought 20 lb. of shrimp for \$9.60 and 20 lb. of lobster for \$14.50. How much more did he pay for the lobster? (\$3.00; \$4.00; \$5.00)
14. One day Stone's Restaurant served 38 lobster dinners, 37 fish dinners, and 41 ham dinners. How many dinners were served in all? (100; 120; 150)
15. At Stone's Restaurant, 4 oysters are served on an order of "oysters on the half shell." How many oysters are needed for 18 orders? (50; 80; 100)



Correcting Mistakes

The examples below show mistakes which are sometimes made. In each example, you will find one or more mistakes.

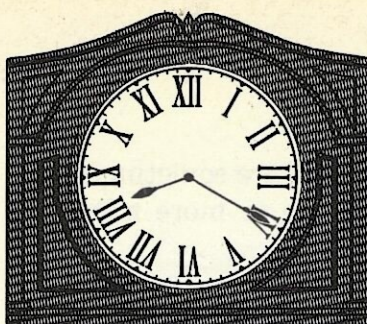
Study each example carefully until you find what is wrong. Then copy the examples and multiply correctly.

	A	B	C	D	E
1.	$\begin{array}{r} 708 \\ 7 \\ \hline 546 \end{array}$	$\begin{array}{r} 602 \\ 4 \\ \hline 2,448 \end{array}$	$\begin{array}{r} 943 \\ 7 \\ \hline 6,581 \end{array}$	$\begin{array}{r} \$5.48 \\ 5 \\ \hline 2740 \end{array}$	$\begin{array}{r} 309 \\ 6 \\ \hline 1,856 \end{array}$
2.	$\begin{array}{r} 942 \\ 70 \\ \hline 6,594 \end{array}$	$\begin{array}{r} \$4.98 \\ 200 \\ \hline \$99.60 \end{array}$	$\begin{array}{r} 59 \\ 84 \\ \hline 236 \\ 4\ 72 \\ \hline 4,856 \end{array}$	$\begin{array}{r} 408 \\ 63 \\ \hline 1\ 224 \\ 2\ 448 \\ \hline 3,672 \end{array}$	$\begin{array}{r} 625 \\ 236 \\ \hline 3\ 750 \\ 18\ 75 \\ \hline 22,500 \end{array}$

Practicing What You Have Learned

Multiply and check:

	A	B	C	D	E
1.	$\begin{array}{r} 76 \\ 56 \\ \hline \end{array}$	$\begin{array}{r} 97 \\ 93 \\ \hline \end{array}$	$\begin{array}{r} 58 \\ 85 \\ \hline \end{array}$	$\begin{array}{r} 47 \\ 74 \\ \hline \end{array}$	$\begin{array}{r} 96 \\ 70 \\ \hline \end{array}$
2.	$\begin{array}{r} 536 \\ 34 \\ \hline \end{array}$	$\begin{array}{r} 970 \\ 48 \\ \hline \end{array}$	$\begin{array}{r} 245 \\ 69 \\ \hline \end{array}$	$\begin{array}{r} 357 \\ 57 \\ \hline \end{array}$	$\begin{array}{r} 689 \\ 64 \\ \hline \end{array}$
3.	$\begin{array}{r} 645 \\ 80 \\ \hline \end{array}$	$\begin{array}{r} 380 \\ 60 \\ \hline \end{array}$	$\begin{array}{r} 409 \\ 50 \\ \hline \end{array}$	$\begin{array}{r} 800 \\ 70 \\ \hline \end{array}$	$\begin{array}{r} 368 \\ 90 \\ \hline \end{array}$
4.	$\begin{array}{r} 281 \\ 973 \\ \hline \end{array}$	$\begin{array}{r} 732 \\ 268 \\ \hline \end{array}$	$\begin{array}{r} 368 \\ 580 \\ \hline \end{array}$	$\begin{array}{r} 409 \\ 807 \\ \hline \end{array}$	$\begin{array}{r} 697 \\ 900 \\ \hline \end{array}$



Roman Numerals for 1 to 100

Perhaps you have seen a clock like the one on this page. On some clock-faces the hours are shown in Roman numerals.

The Romans used letters for numbers. They wrote the numbers one, five, ten, fifty, and one hundred as shown here. They used these five letters to write all numbers from 1 to 100.

ROMAN	ARABIC
I	1
V	5
X	10
L	50
C	100

The letters which the Romans used to write numbers are called **Roman numerals**. The figures which we use to write numbers are called **Arabic numerals**.

You can see from the numbers below that when two or more Roman numerals of the same kind stand together, the numbers are added. You can see, too, that when one or more smaller numerals are placed to the right of a larger numeral, the numbers are added.

$$II = I + I (1 + 1 = 2)$$

$$VIII = V + III (5 + 3 = 8)$$

$$XXX = X + X + X (10 + 10 + 10 = 30)$$

$$LVI = L + V + I (50 + 5 + 1 = 56)$$

From the numerals below, you can see that when a smaller numeral is at the left of a larger one, the smaller number is subtracted from the larger one.

$$IV = V - I (5 - 1 = 4)$$

$$IX = X - I (10 - 1 = 9)$$

$$XC = C - X (100 - 10 = 90)$$

$$XLVI = L - X + VI (50 - 10 + 6 = 46)$$

Reading and Writing Roman Numerals

The Romans wrote 30: XXX. But 40 they thought of as 10 less than 50 and wrote it: XL. Similarly they thought of 90 as 10 less than 100 and wrote it: XC.

Tell what these Roman numerals stand for: III; XX; VII; XXXVI; XXIV; XIX; LIV; LXV; XLIV; XXIX; XCVIII.

In Roman numerals III means $1 + 1 + 1$, or 3. In our system 111 means 1 hundred, 1 ten, and 1 one.

In the number 80, the 0 shows that there are no ones. The 8 is in tens' place and stands for 8 tens. The Romans would have written 80: LXXX.

The Romans did not need 0 as a place-holder, for there was no ones' place, tens' place, hundreds' place, and so on, in their system of numbers.

The Arabic system of numbers which we use is shorter and easier in writing many numbers. With the figures 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0, we can write any number. The location of a figure in the number shows what its value is.

Write the following numbers with Roman numerals:

- | | | | | | | | | |
|----|----|----|----|----|----|-----|----|----|
| 1. | 7 | 9 | 12 | 15 | 16 | 18 | 20 | 25 |
| 2. | 28 | 30 | 37 | 40 | 43 | 58 | 50 | 60 |
| 3. | 67 | 75 | 78 | 84 | 90 | 100 | 96 | 99 |

Write the following numbers with Arabic numerals:

- | | | | | | | |
|----|------|-------|-------|-----|-------|-----|
| 4. | XIV | XIX | XXI | XXV | XXXII | XL |
| 5. | XLVI | XLIX | LII | LVI | LXI | LXV |
| 6. | LXX | LXXXI | LXXXV | XC | XCII | C |

7. Roman numerals are still used for certain purposes. Make a list of all the different ways in which you have seen Roman numerals used.

Two Problems in One

1. Ruth went to the fruit market for her mother. She bought a cantaloupe for 29 cents and a pound of red cherries for 39 cents. How much money did she spend? How much change did she receive from one dollar?

This problem is really two problems in one. Two questions are asked. You must solve the first part before you can solve the second.

First add, to find how much Ruth spent:

$$$.29 + $.39 = $.68$$

Then subtract \$.68 from \$1.00 to find the amount of change she received:

$$\$1.00 - $.68 = $.32$$

2. On a trip, Dick bought 3 different pennants. They cost \$.75 apiece. How much change did he receive from three dollars?

Multiply: $3 \times \$.75 = \$2.25$ spent in all.

Subtract: $\$3.00 - \$2.25 = \$.75$ received in change.

Is \$.75 a sensible answer?





Two questions are asked in some of the problems below. In others, only one question is asked, but there is another you must think of and answer first.

3. Kenneth puts quarters in his bank. He is saving them to buy a tennis racket that costs \$8.75. One day he found that he had 9 quarters in his bank. How much more money does he need?

4. Alice bought one book which cost 75 cents and another which cost 50 cents. How much did she spend in all? How much change did she receive from \$1.50?

5. John bought two boxes of crayons at 24 cents each and a puzzle for 15 cents. How much did he spend in all?

6. Helen bought 10 favors for a party. They cost 15 cents apiece. How much change did she receive from \$2.00?

7. David divided 54 carrots from his garden into bunches of 6 each. He sold them for 8 cents a bunch. How many bunches of carrots did he sell? How much money did he receive?

8. Jean had saved \$2.75. She spent 85 cents to buy a gift for Mary. The next day she helped her mother and earned 25 cents. How much money did she have then?

9. Sally made 34 paper hats for a large school party and Nancy made 27. They needed 140. How many did the other girls have to make?

Making Sure of Multiplication

If you make mistakes in the examples below, turn to the pages listed at the right of the rows. There you will find other examples like those you missed. Study those pages again.

For Set I write only the answers:

Set I

A	B
1. Eight 7's and 5 are ?	$2 \times 7 + 1 = ?$ 43
2. Five 9's and 3 are ?	$6 \times 9 + 5 = ?$
3. Seven 6's and 5 are ?	$5 \times 8 + 4 = ?$
4. Nine 4's and 3 are ?	$7 \times 3 + 2 = ?$
5. Six 5's and 2 are ?	$4 \times 4 + 3 = ?$
6. Four 7's and 3 are ?	$8 \times 6 + 2 = ?$

Copy the examples in Sets II to VII and multiply:

Set II

	A	B	C	D	E	F	
1.	$\begin{array}{r} 31 \\ 87 \end{array}$	$\begin{array}{r} 93 \\ 53 \end{array}$	$\begin{array}{r} 48 \\ 58 \end{array}$	$\begin{array}{r} 65 \\ 92 \end{array}$	$\begin{array}{r} 86 \\ 74 \end{array}$	$\begin{array}{r} 73 \\ 69 \end{array}$	$\begin{array}{r} 77 \\ 79 \end{array}$
2.	$\begin{array}{r} 65 \\ 80 \end{array}$	$\begin{array}{r} 54 \\ 60 \end{array}$	$\begin{array}{r} 75 \\ 50 \end{array}$	$\begin{array}{r} \$.94 \\ 90 \end{array}$	$\begin{array}{r} \$.86 \\ 60 \end{array}$	$\begin{array}{r} \$.79 \\ 40 \end{array}$	$\begin{array}{r} 81 \\ 82 \end{array}$

Set III

	A	B	C	D	E	F	
1.	$\begin{array}{r} 542 \\ 74 \end{array}$	$\begin{array}{r} 837 \\ 36 \end{array}$	$\begin{array}{r} 367 \\ 28 \end{array}$	$\begin{array}{r} 795 \\ 47 \end{array}$	$\begin{array}{r} 245 \\ 38 \end{array}$	$\begin{array}{r} 824 \\ 19 \end{array}$	85
2.	$\begin{array}{r} \$.49 \\ 64 \end{array}$	$\begin{array}{r} \$.80 \\ 72 \end{array}$	$\begin{array}{r} \$.79 \\ 58 \end{array}$	$\begin{array}{r} \$ 2.68 \\ 39 \end{array}$	$\begin{array}{r} \$ 5.60 \\ 56 \end{array}$	$\begin{array}{r} \$ 6.40 \\ 73 \end{array}$	86

Set IV

	A	B	C	D	E	F	
1.	<u>90</u> <u>80</u>	<u>50</u> <u>60</u>	<u>680</u> <u>10</u>	<u>360</u> <u>40</u>	<u>903</u> <u>90</u>	<u>700</u> <u>70</u>	89 90
2.	<u>853</u> <u>400</u>	<u>\$9.20</u> <u>600</u>	<u>\$5.97</u> <u>300</u>	<u>\$7.00</u> <u>800</u>	<u>500</u> <u>900</u>	<u>492</u> <u>700</u>	91

Set V

1.	<u>309</u> <u>23</u>	<u>608</u> <u>46</u>	<u>405</u> <u>27</u>	<u>700</u> <u>38</u>	<u>800</u> <u>29</u>	<u>900</u> <u>67</u>	92
2.	<u>3486</u> <u>57</u>	<u>9247</u> <u>39</u>	<u>5708</u> <u>46</u>	<u>5360</u> <u>82</u>	<u>2509</u> <u>75</u>	<u>6853</u> <u>39</u>	95

Set VI

1.	<u>526</u> <u>253</u>	<u>328</u> <u>467</u>	<u>483</u> <u>195</u>	<u>619</u> <u>746</u>	<u>743</u> <u>236</u>	<u>197</u> <u>815</u>	96, 97 Set I Rows 1, 2
2.	<u>506</u> <u>591</u>	<u>409</u> <u>684</u>	<u>207</u> <u>587</u>	<u>180</u> <u>273</u>	<u>620</u> <u>345</u>	<u>540</u> <u>627</u>	97, Set I Rows 3, 4

Set VII

1.	<u>495</u> <u>600</u>	<u>749</u> <u>700</u>	<u>592</u> <u>490</u>	<u>384</u> <u>280</u>	<u>530</u> <u>800</u>	<u>870</u> <u>400</u>	97, Set II
2.	<u>738</u> <u>506</u>	<u>729</u> <u>702</u>	<u>\$3.50</u> <u>607</u>	<u>\$4.50</u> <u>305</u>	<u>600</u> <u>804</u>	<u>\$7.00</u> <u>908</u>	98

Using Multiplication in Problems

1. In the fall, turkeys weighing 20 pounds or less sold for 59 cents a pound at Mr. Strickland's market. How much did a 19-pound turkey cost?
2. At the same time, turkeys weighing more than 20 pounds sold for 53 cents a pound. How much did a 24-pound turkey cost?
3. Ernest belongs to the Science Club at school. The club has 29 members. The dues for each member are \$1.25. How much money does the club collect each year in dues?
4. A farmer sold 18 crates of strawberries at \$9.36 a crate. How much did he receive for the berries?
5. Mr. Rowe sold 20 small radios at \$18.95 each. How much did he receive for all the radios?
6. He sold 25 television sets at \$195 each. How much did he receive for all the sets?
7. Sixteen television sets were sold at \$359 each. What was the total amount received for the sets?

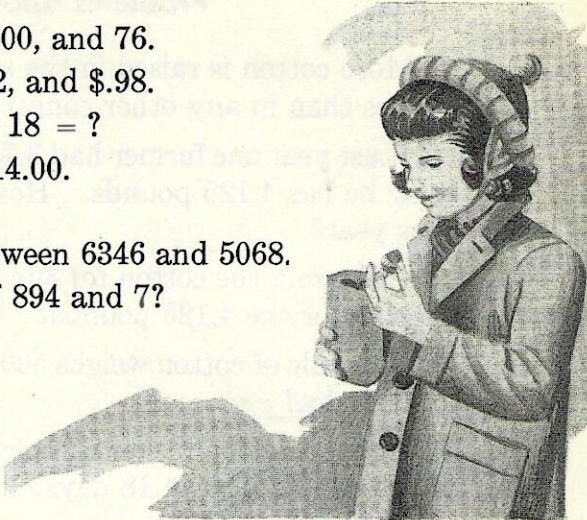


Keeping in Practice

Set I

Copy these examples and do what the signs or words tell you to do:

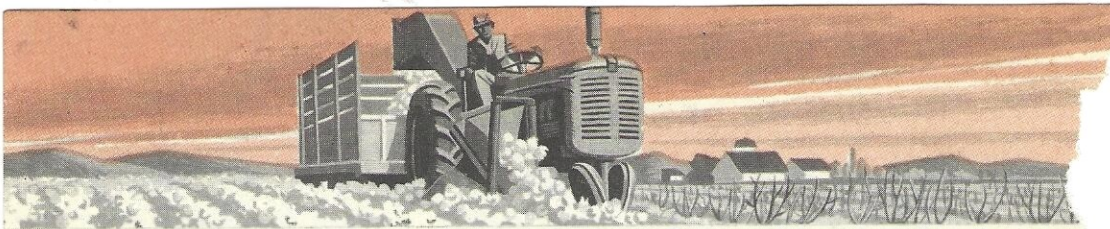
1. Find the sum of 689, 500, and 76.
2. Add \$5.75, \$2.86, \$4.32, and \$.98.
3. $57 + 64 + 28 + 76 + 18 = ?$
4. Subtract \$9.05 from \$14.00.
5. 3008 minus 1464 = ?
6. Find the difference between 6346 and 5068.
7. What is the product of 894 and 7?
8. Multiply \$7.46 by 8.
9. $40 \times 836 = ?$
10. Divide 7209 by 8.
11. $\$50.82 \div 7 = ?$
12. $\$32.08 \div 4 = ?$
13. Mary bought $\frac{1}{4}$ pound of hot roasted chestnuts. How many ounces of these chestnuts did she buy? (1 lb. = 16 oz.)



Set II

Copy and multiply. Check your work.

	A	B	C	D	E
1.	$\begin{array}{r} 38 \\ 68 \\ \hline \end{array}$	$\begin{array}{r} 35 \\ 57 \\ \hline \end{array}$	$\begin{array}{r} 52 \\ 92 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ 65 \\ \hline \end{array}$	$\begin{array}{r} 76 \\ 34 \\ \hline \end{array}$
2.	$\begin{array}{r} \$98 \\ 50 \\ \hline \end{array}$	$\begin{array}{r} \$76 \\ 60 \\ \hline \end{array}$	$\begin{array}{r} \$84 \\ 30 \\ \hline \end{array}$	$\begin{array}{r} 295 \\ 38 \\ \hline \end{array}$	$\begin{array}{r} 864 \\ 19 \\ \hline \end{array}$
3.	$\begin{array}{r} 872 \\ 745 \\ \hline \end{array}$	$\begin{array}{r} 590 \\ 456 \\ \hline \end{array}$	$\begin{array}{r} 600 \\ 870 \\ \hline \end{array}$	$\begin{array}{r} 400 \\ 495 \\ \hline \end{array}$	$\begin{array}{r} 973 \\ 769 \\ \hline \end{array}$



Problems about Cotton

More cotton is raised in the southern part of the United States than in any other country of the world.

1. Last year one farmer had 3,755 pounds of cotton. This year he has 4,125 pounds. How much more does he have this year?
2. If he sold the cotton for 30¢ a pound, how much did he receive for the 4,125 pounds?
3. If a bale of cotton weighs 500 pounds, what is the weight of 60 bales?
4. A good cotton picker can pick 300 pounds a day. How much can he pick in 18 days?
5. Some cotton pickers work very fast. One evening when the cotton was "weighed in," Bob had picked 418 pounds, Joe had picked 389 pounds, and Bill 396 pounds. How many pounds did they pick altogether?
6. In a cotton-picking contest, a fifteen-year-old school boy picked 128 pounds of cotton in 2 hours. At that rate, how many pounds did he pick in an hour?
7. If a cotton picker is paid \$2.25 for picking a hundred pounds of cotton, how much does he receive for picking 300 pounds?
8. If a cotton merchant sold a bale of cotton for \$91.80, how much would he receive for 25 bales?
9. One grade of cotton sold for \$107.60 a bale. Another grade sold for \$123.70 a bale. What was the difference in price?

Using Measures

1. Copy the facts below and fill in the missing numbers:

$$1 \text{ lb.} = \frac{?}{?} \text{ oz.}$$

$$12 \text{ mo.} = \frac{?}{?} \text{ yr.}$$

$$1 \text{ yd.} = \frac{?}{?} \text{ ft.}$$

$$1 \text{ wk.} = \frac{?}{?} \text{ da.}$$

$$1 \text{ bu.} = \frac{?}{?} \text{ pk.}$$

$$12 \text{ in.} = \frac{?}{?} \text{ ft.}$$

$$1 \text{ min.} = \frac{?}{?} \text{ sec.}$$

$$365 \text{ da.} = \frac{?}{?} \text{ yr.}$$

$$1 \text{ doz.} = \frac{?}{?} \text{ things}$$

$$24 \text{ hr.} = \frac{?}{?} \text{ da.}$$

$$1 \text{ qt.} = \frac{?}{?} \text{ pt.}$$

$$4 \text{ pk.} = \frac{?}{?} \text{ bu.}$$

$$1 \text{ hr.} = \frac{?}{?} \text{ min.}$$

$$60 \text{ sec.} = \frac{?}{?} \text{ min.}$$

If you could not fill in all the blanks correctly, turn to the tables of measures on page 344. Learn the facts you do not know.

Write the answers to the questions below. In each question there is one fact you must know before you can find the answer.

For example, before you can find the number of pecks in 7 bushels, you must know how many pecks there are in 1 bushel. There are 4 pecks in 1 bushel. Then, in 7 bushels there are 7×4 pecks, or 28 pecks.

2. How many gallons in 12 quarts?

To find the number of gallons in 12 quarts, divide 12 by 4. Why do you divide by 4?

3. How many are 6 dozen rolls?

4. How many ounces in 4 pounds?

5. How many quarts in 36 pints?

6. How many days in 5 weeks?

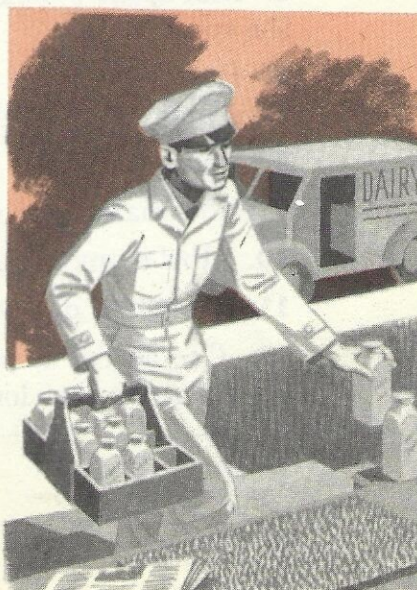
7. How many feet in 8 yards?

8. Two hours equal how many minutes?

9. Two feet equal how many inches?

10. How many yards in 18 feet?

~ 111 ~





Using Fractions in Measures

1. It takes Mr. Green $\frac{1}{4}$ hour to go from his home to his store. How many minutes does it take him to go this distance?
2. Mary went to Green's General Store for her mother. She bought $\frac{1}{2}$ dozen lemons. How many lemons are there in $\frac{1}{2}$ dozen?
3. Then she bought $\frac{1}{2}$ pound of butter. How many ounces of butter did she buy?
4. Mary had 1 yard of ribbon and needed $\frac{1}{4}$ yard more. How many inches of ribbon did she need?
5. It took Mary $\frac{1}{3}$ hour to do her shopping. How many minutes did it take?
6. Ann spent $\frac{1}{2}$ dollar at the store. How many cents did she spend?
7. Henry spent $\frac{1}{6}$ of the year helping his uncle in the store. How many months did he help in the store?
8. How many pints in $\frac{1}{2}$ quart? in $\frac{1}{2}$ gallon?
9. How many quarts in $\frac{1}{2}$ gallon? in $\frac{1}{4}$ gallon?
10. How many pecks are there in $\frac{1}{2}$ bushel? in $\frac{1}{4}$ bushel?
11. One-third of a yard is how many feet?
12. George cut a piece of board $\frac{1}{4}$ of a foot in length. How many inches long was the board?

Understanding What Numbers Mean

1. The number 20 means 2 tens. It also means 20 ones. How many tens are there in 60? How many ones are there in 60?
2. How many ones are there in 8 tens? in 4 tens?
3. The number 600 means 6 hundreds. It also means 60 tens, or 600 ones. How many tens are there in the number 200? in 400? in 800?
4. How many ones are there in 300? in 700?
5. There are 45 tens in the number 450. How many tens are there in 730? in 860? in 920?
6. Give the number that means 26 tens; 69 tens.
7. Give the number that means 100 ones; 400 ones.

KEEPING ON YOUR TOES

Give the answers to the following examples without using pencil and paper:

1. A. $\begin{array}{r} 60 \\ \times 5 \\ \hline \end{array}$ B. $\begin{array}{r} 17 \\ + 8 \\ \hline \end{array}$ C. $\begin{array}{r} 7 \overline{)68} \\ \hline \end{array}$ D. $\begin{array}{r} 50 \\ - 14 \\ \hline \end{array}$
2. A. 90 cents = ? dimes C. $81 \div \underline{\quad} = 9$
B. $7 + 3 + 8 = ?$ D. Seven 8's are ?
3. A. $7 \times 6 + 4 = ?$ C. $29 - \underline{\quad} = 14$
B. $\underline{\quad} \times 9 = 54$ D. $\underline{\quad} \div 7 = 9$
4. A. $\frac{1}{3}$ of 21 = ? C. $\frac{1}{5}$ of 5 = ?
B. $\frac{1}{6}$ of 48 = ? D. $\frac{1}{4}$ of 28 = ?
5. Frank had 3 quarters, 2 dimes, and 3 pennies. How much money did he have altogether?



3

LEARNING MORE ABOUT DIVISION

Dividing by Two-Place Numbers

Girl Scout Troop 8 was having a cookie and candy sale.

Hazel and Ruth were selling the cookies. Four hundred twenty cookies had been brought in. How many dozen cookies did they have for sale?

"There are 12 cookies in a dozen," said Ruth. "If we divide 420 by 12, we can find out how many dozen cookies we have."

Ruth divided and found that they had 35 dozen cookies to sell.

Getting Ready to Divide by Larger Numbers

Before you try to divide by two-place divisors, it is a good plan to do the following things:

1. Make sure of the multiplication facts. Turn back to page 40 and see how accurately you can write the products.
2. Make sure of the division facts. Turn to page 58 and see how accurately you can write the quotients.
3. Make sure of the steps used in dividing by one-place divisors, as shown on page 62.

Read each example below and say the quotient figure only:

A	B	C	D	E	F
1. $8\overline{)36}$	$7\overline{)59}$	$5\overline{)46}$	$9\overline{)65}$	$8\overline{)67}$	$6\overline{)47}$
2. $7\overline{)45}$	$6\overline{)41}$	$3\overline{)14}$	$9\overline{)61}$	$8\overline{)52}$	$3\overline{)20}$
3. $7\overline{)34}$	$5\overline{)29}$	$4\overline{)30}$	$9\overline{)85}$	$6\overline{)58}$	$4\overline{)39}$
4. $5\overline{)42}$	$9\overline{)30}$	$2\overline{)19}$	$8\overline{)79}$	$3\overline{)26}$	$7\overline{)38}$
5. $4\overline{)23}$	$7\overline{)55}$	$6\overline{)50}$	$6\overline{)33}$	$3\overline{)17}$	$4\overline{)19}$

Copy the following examples and multiply:

6.	$\begin{array}{r} 45 \\ 5 \end{array}$	$\begin{array}{r} 24 \\ 6 \end{array}$	$\begin{array}{r} 51 \\ 7 \end{array}$	$\begin{array}{r} 82 \\ 4 \end{array}$	$\begin{array}{r} 65 \\ 3 \end{array}$	$\begin{array}{r} 25 \\ 8 \end{array}$
7.	$\begin{array}{r} 58 \\ 9 \end{array}$	$\begin{array}{r} 79 \\ 7 \end{array}$	$\begin{array}{r} 98 \\ 3 \end{array}$	$\begin{array}{r} 67 \\ 8 \end{array}$	$\begin{array}{r} 74 \\ 9 \end{array}$	$\begin{array}{r} 69 \\ 6 \end{array}$

Multiply, without copying, in the examples below. Look at Example 8A, 3×13 . Think, three 3's are 9. Then think, three 1's are 3. The product is 39.

In some you will have a figure to carry. Look at Example 8B, 5×25 . Think, five 5's are 25. Carry 2. Then, five 2's are 10, and 2 are 12. The product is 125.

Copy the numbers of these examples and after the numbers write the products.

	A	B	C
8.	$3 \times 13 = ?$	$5 \times 25 = ?$	$5 \times 46 = ?$
9.	$4 \times 30 = ?$	$3 \times 67 = ?$	$7 \times 23 = ?$
10.	$4 \times 15 = ?$	$5 \times 73 = ?$	$2 \times 54 = ?$
11.	$6 \times 26 = ?$	$4 \times 42 = ?$	$6 \times 43 = ?$
12.	$2 \times 32 = ?$	$3 \times 34 = ?$	$2 \times 86 = ?$

Copy and subtract. Check your work.

	A	B	C	D	E	F
13.	$\begin{array}{r} 48 \\ 45 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ 63 \\ \hline \end{array}$	$\begin{array}{r} 61 \\ 54 \\ \hline \end{array}$	$\begin{array}{r} 91 \\ 72 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ 43 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ 80 \\ \hline \end{array}$
14.	$\begin{array}{r} 70 \\ 37 \\ \hline \end{array}$	$\begin{array}{r} 86 \\ 49 \\ \hline \end{array}$	$\begin{array}{r} 104 \\ 96 \\ \hline \end{array}$	$\begin{array}{r} 220 \\ 216 \\ \hline \end{array}$	$\begin{array}{r} 100 \\ 78 \\ \hline \end{array}$	$\begin{array}{r} 387 \\ 387 \\ \hline \end{array}$
15.	$\begin{array}{r} 306 \\ 295 \\ \hline \end{array}$	$\begin{array}{r} 300 \\ 165 \\ \hline \end{array}$	$\begin{array}{r} 470 \\ 424 \\ \hline \end{array}$	$\begin{array}{r} 400 \\ 252 \\ \hline \end{array}$	$\begin{array}{r} 604 \\ 328 \\ \hline \end{array}$	$\begin{array}{r} 368 \\ 364 \\ \hline \end{array}$

16. Henry had 57 marbles. He gave one-third of them to each of his two brothers. How many marbles did he give each brother? How many marbles did Henry have left?

17. Joan spent \$1.31 for Christmas cards and Helen spent \$.87. How much more did Joan spend than Helen?

18. Mrs. Smith sold a 5-pound fruit cake for 79 cents a pound. How much did she get for the cake?

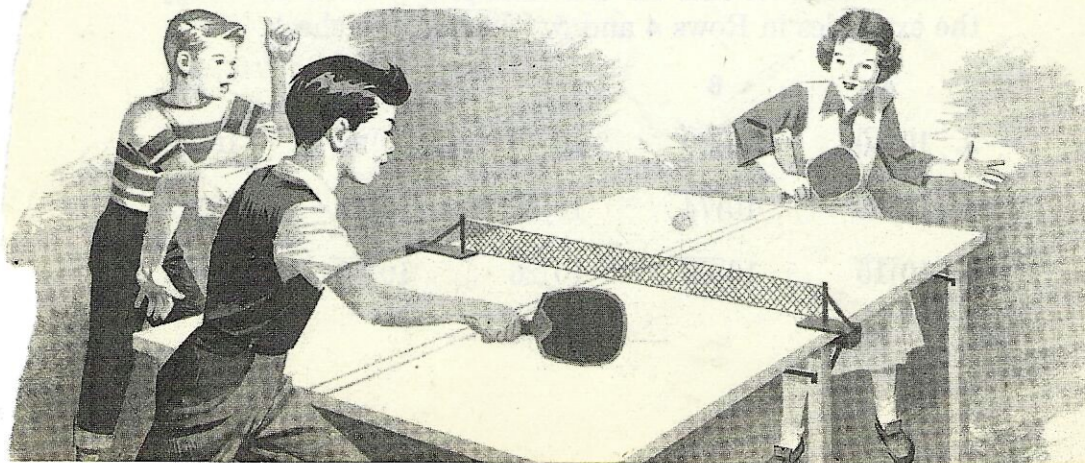
Using Division

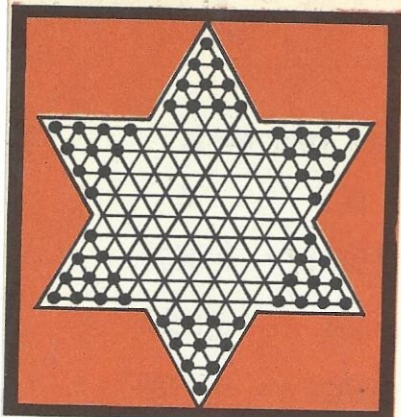
Copy these examples and divide. Check your work.

A	B	C	D	E
1. $6\overline{)852}$	$8\overline{)994}$	$7\overline{)4613}$	$3\overline{)1979}$	$9\overline{)3279}$
2. $7\overline{)490}$	$4\overline{)2960}$	$5\overline{)2516}$	$5\overline{)354}$	$6\overline{)5225}$
3. $8\overline{)5664}$	$6\overline{)3600}$	$2\overline{)1795}$	$3\overline{)2624}$	$9\overline{)6769}$

Read each problem carefully before you try to solve it. Remember to place the dollar sign and point correctly. Check your work.

- One morning the bus driver told Fred that he had collected \$2.24 in fares on that trip. The bus fare is 7¢. How many passengers rode on the bus that trip?
- Mrs. Jones sold 6 plum puddings at the fair for \$3.90. How much did she get for each?
- John bought 5 magazines for 75 cents. What was the average price of the magazines?
- Ralph sold 8 rabbits for \$12.00. How much did he get for each rabbit?
- Joe, Helen, and David bought a set of table tennis to use at home. The set cost \$4.95. If they share the cost equally, how much must each pay?





Dividing by 10

1. Sixty marbles come with each set of Chinese checkers. Each player needs 10 marbles. How many people can play at one time?

To find the answer, divide 60 by 10. This means you are dividing 6 tens by 1 ten, or 60 ones by 10 ones.

$$\begin{array}{r} 6 \\ 10 \overline{)60} \end{array}$$

There are as many 10's in 60 as there are 1's in 6. Write the 6 in ones' place in the quotient, above the 0 in 60.

Six players may play at one time.

2. Nancy lost some of her red marbles and has only 54 marbles left. Now, how many can play Chinese checkers at one time, if each player needs 10 marbles?

$$\begin{array}{r} 5 \text{ R} 4 \\ 10 \overline{)54} \\ \underline{50} \\ 4 \end{array}$$

Divide 54 by 10. There are as many 10's in 54 as there are 1's in 5. Write the 5 above the 4 in 54. Then multiply 10 by 5. Write 50 below the 54. Subtract 50 from 54.

Check

$$\begin{array}{r} 10 \\ \times 5 \\ \hline 50 \\ + 4 \\ \hline 54 \end{array}$$

Five players can use Nancy's set, and there will be 4 marbles left over.

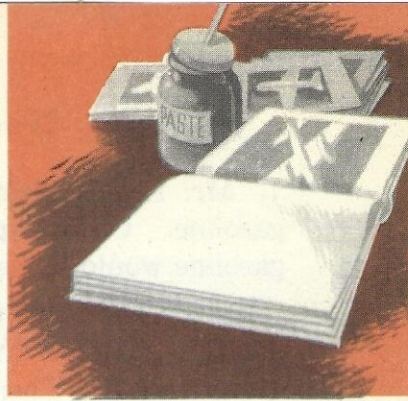
Notice how the work is checked.

Give the quotients for the examples in Row 3. Copy the examples in Rows 4 and 5. Divide and check.

A	B	C	D	E
3. $10 \overline{)40}$	$10 \overline{)80}$	$10 \overline{)10}$	$10 \overline{)90}$	$10 \overline{)70}$
4. $10 \overline{)58}$	$10 \overline{)74}$	$10 \overline{)93}$	$10 \overline{)41}$	$10 \overline{)67}$
5. $10 \overline{)15}$	$10 \overline{)89}$	$10 \overline{)26}$	$10 \overline{)33}$	$10 \overline{)52}$

Divisors Ending in Zero

1. Ruth and Kenneth collected 80 pictures of airplanes. They pasted them in scrapbooks, and found that 40 pictures filled one book. Since all of the pictures were about the same size, how many books were needed to hold the pictures?



You divide to find how many 40's there are in 80. There are as many 40's in 80 as there are 4's in 8. There are two 4's in 8. Write 2 above the 0 in 80. This shows you are dividing 80 ones by 40 ones.

$$\begin{array}{r} 2 \\ 40 \overline{)80} \end{array}$$

Give the quotients for these examples:

2. A. $30 \overline{)60}$ B. $20 \overline{)80}$ C. $30 \overline{)90}$ D. $20 \overline{)20}$ E. $30 \overline{)30}$

3. Mary and Jack collected 96 pictures of boats. If 40 pictures filled one book, how many books did they need?

$$\begin{array}{r} 2 \text{ R}16 \\ 40 \overline{)96} \\ \underline{80} \\ 16 \end{array}$$

There are about as many 40's in 96 as there are 4's in 9. Write 2 above the 6 in 96. Multiply 40 by 2. Write 80 under 96. Compare 80 with 96 to see that it is not larger. Subtract. The remainder is 16.

$$\begin{array}{r} \text{Check} \\ 40 \\ \times 2 \\ \hline 80 \\ + 16 \\ \hline 96 \end{array}$$

Notice how the work is checked.

Copy these examples. Divide and check.

- | | A | B | C | D | E |
|----|---------------------|---------------------|---------------------|---------------------|---------------------|
| 4. | $30 \overline{)62}$ | $20 \overline{)85}$ | $30 \overline{)78}$ | $40 \overline{)75}$ | $60 \overline{)84}$ |
| 5. | $50 \overline{)58}$ | $40 \overline{)99}$ | $70 \overline{)78}$ | $20 \overline{)62}$ | $40 \overline{)56}$ |

Dividing Larger Numbers

1. Mr. Nelson's car will travel 20 miles on 1 gallon of gasoline. On a trip of 140 miles, how many gallons of gasoline would he use?

Divide 140 by 20 to find the answer. The 1 in 140 cannot be divided by 2, but 14 can be divided by 2. There are about as many 20's in 140 as there are 2's in 14. Write the 7 in ones' place, above the zero, for you are dividing 140 ones by 20.

$$\begin{array}{r} 7 \\ 20 \overline{)140} \end{array}$$

Mr. Nelson would use 7 gallons of gasoline.

2. One fifth-grade class made 125 sandwiches for a picnic lunch. There were 30 children at the picnic. How many sandwiches were there for each child? How many extra sandwiches were there?

$$\begin{array}{r} 4 \text{ R } 5 \\ 30 \overline{)125} \\ \underline{120} \\ 5 \end{array}$$

Divide 125 by 30. There are no 3's in 1; so think, how many 3's in 12? There are about as many 30's in 125 as there are 3's in 12. Write 4 above the 5 in 125. Then multiply 30 by 4. Compare 120 with 125. Subtract: $125 - 120 = 5$.

Each child would have 4 sandwiches, and there were 5 extra sandwiches.

Give the quotients for the examples in Row 3. Copy each example in Rows 4 and 5. Divide and check.

A	B	C	D
3. $30 \overline{)240}$	$40 \overline{)160}$	$50 \overline{)350}$	$80 \overline{)560}$
4. $40 \overline{)364}$	$50 \overline{)203}$	$30 \overline{)212}$	$20 \overline{)121}$
5. $50 \overline{)225}$	$20 \overline{)176}$	$30 \overline{)195}$	$40 \overline{)350}$

Easy Division Examples

1. At his roadside stand Mr. Landis sold 21 baskets of grapes weighing 63 pounds in all. What was the average weight of the baskets of grapes?

Divide 63 by 21. Think, there are about as many 21's in 63 as there are 2's in 6. Write 3 in the quotient, above the 3 in 63. Multiply the divisor, 21, by the quotient, 3.

$$\begin{array}{r} 3 \\ 21 \overline{)63} \\ \underline{63} \end{array}$$

Compare 63 with the number in the dividend to see that it is not larger. Is there a remainder?

2. He also sold 32 chickens weighing 128 pounds in all. What was their average weight?

Divide 128 by 32. There are no 3's in 1, so think, how many 3's in 12? There are about as many 32's in 128 as there are 3's in 12. Where should you write the 4? Multiply 32 by 4.

$$\begin{array}{r} 4 \\ 32 \overline{)128} \\ \underline{128} \end{array}$$

The average weight of the chickens was 4 pounds.

Copy and divide:

A	B	C	D	E
3. $21 \overline{)42}$	$21 \overline{)84}$	$22 \overline{)66}$	$44 \overline{)88}$	$31 \overline{)93}$
4. $41 \overline{)82}$	$24 \overline{)48}$	$33 \overline{)99}$	$42 \overline{)84}$	$32 \overline{)64}$
5. $31 \overline{)186}$	$51 \overline{)408}$	$41 \overline{)164}$	$71 \overline{)213}$	$82 \overline{)246}$
6. $52 \overline{)156}$	$41 \overline{)123}$	$21 \overline{)168}$	$62 \overline{)186}$	$82 \overline{)328}$
7. $61 \overline{)366}$	$92 \overline{)276}$	$91 \overline{)455}$	$81 \overline{)243}$	$51 \overline{)255}$



Easy Division with Remainders

Forty-two boys and girls were at Betty's Christmas party. Her mother had bought 130 candy canes for the party. How many candy canes were there for each child? How many extra canes were there?

Divide: How many 42's in 130? There are about as many 42's in 130 as there are 4's in 13. Write 3 in the quotient above the 0.

$$\begin{array}{r} 3 \text{ R}4 \\ 42 \overline{)130} \\ \underline{126} \\ 4 \end{array}$$

Multiply: Think, three 2's are 6. Then, three 4's are 12.

Compare 126 with 130.

Subtract: In this example you have to use one of the 3 tens before you can subtract, for you cannot take 6 ones from no ones.

Compare: Is the remainder less than the divisor?

What is the answer?

Copy, divide, and check. Be sure to subtract correctly.

A	B	C	D	E
1. $51 \overline{)320}$	$62 \overline{)190}$	$31 \overline{)132}$	$42 \overline{)174}$	$21 \overline{)135}$
2. $32 \overline{)135}$	$21 \overline{)195}$	$43 \overline{)140}$	$52 \overline{)215}$	$71 \overline{)290}$
3. $62 \overline{)133}$	$41 \overline{)254}$	$81 \overline{)575}$	$72 \overline{)152}$	$61 \overline{)490}$

Practicing Division

The children in Miss Long's class printed 160 tickets for a play they were planning to give. Each of the 32 children took the same number of tickets to sell. How many tickets did each child take?

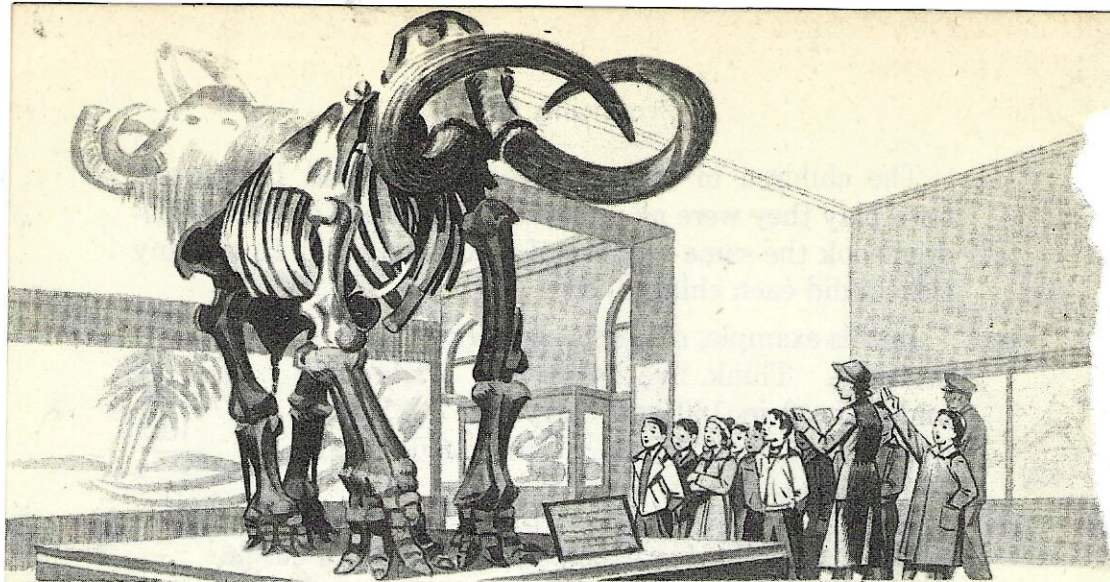
In this example, remember to carry when you multiply. Think, five 2's are 10. Write the 0 under the 0 in 160 and carry the 1. Think, five 3's are 15, and 1 is 16. Write 16 under the 16 in 160.

$$\begin{array}{r} 5 \\ 32 \overline{)160} \\ \underline{160} \end{array}$$

Copy the following examples. Divide and check.

- | A | B | C | D | E |
|---|----------------------|----------------------|----------------------|----------------------|
| 1. $32 \overline{)256}$ | $63 \overline{)252}$ | $43 \overline{)389}$ | $65 \overline{)328}$ | $54 \overline{)432}$ |
| 2. $84 \overline{)514}$ | $43 \overline{)349}$ | $34 \overline{)239}$ | $52 \overline{)275}$ | $33 \overline{)140}$ |
| 3. $44 \overline{)190}$ | $23 \overline{)139}$ | $52 \overline{)468}$ | $22 \overline{)198}$ | $75 \overline{)679}$ |
| 4. In Example 3E, what number is the divisor? What number is the dividend? What is the quotient? What is the remainder? | | | | |





Using Division in Problems

Read the following problems and divide to find the answers. Be sure to place the quotient figures correctly.

1. Some of the pupils of Maple School made a trip by bus to the Natural History Museum in a large city. The city is 105 miles away. If the buses averaged 35 miles per hour, how long did it take to reach the city?
2. One hundred fifty teachers and children made the trip. If there were 30 in each bus, how many buses were used?
3. It cost \$60 to rent one bus for the trip. How much did each of the 30 passengers have to pay?
4. Guides showed the pupils and other visitors around the museum. There were 180 persons in all. Each guide took a group of 20. How many guides were needed?
5. Roger had brought 60 cents with which to buy animal pictures for his collection. If they cost 10 cents each, how many could he buy?
6. Mary bought a set of 20 post cards for \$1.00. What was the cost of one card?

Practicing What You Have Learned

Set I

Copy the examples below and divide. Check your work.

A	B	C	D	E
1. $21 \overline{)134}$	$31 \overline{)224}$	$41 \overline{)172}$	$31 \overline{)195}$	$52 \overline{)112}$
2. $62 \overline{)254}$	$61 \overline{)312}$	$53 \overline{)195}$	$71 \overline{)292}$	$82 \overline{)337}$
3. $71 \overline{)506}$	$91 \overline{)280}$	$61 \overline{)554}$	$82 \overline{)193}$	$81 \overline{)580}$
4. $31 \overline{)205}$	$31 \overline{)298}$	$84 \overline{)142}$	$72 \overline{)347}$	$82 \overline{)191}$
5. $92 \overline{)261}$	$63 \overline{)142}$	$94 \overline{)232}$	$85 \overline{)150}$	$71 \overline{)650}$
6. $42 \overline{)180}$	$51 \overline{)483}$	$91 \overline{)600}$	$63 \overline{)210}$	$54 \overline{)146}$

Set II

In these examples, you will have to carry when you multiply. Check your work.

1. $22 \overline{)154}$	$74 \overline{)299}$	$35 \overline{)175}$	$45 \overline{)229}$	$65 \overline{)520}$
2. $54 \overline{)280}$	$75 \overline{)305}$	$74 \overline{)370}$	$85 \overline{)425}$	$44 \overline{)316}$
3. $44 \overline{)176}$	$84 \overline{)510}$	$56 \overline{)230}$	$53 \overline{)381}$	$55 \overline{)275}$
4. $67 \overline{)275}$	$65 \overline{)263}$	$72 \overline{)524}$	$85 \overline{)521}$	$95 \overline{)475}$
5. $73 \overline{)448}$	$94 \overline{)470}$	$64 \overline{)388}$	$55 \overline{)342}$	$73 \overline{)370}$

Counting Your Change

When you buy things at the store, the clerk counts your change as he hands it to you. It is always a good plan to count it again, to see whether or not you have received the right amount.

Read the following problems and answer the questions asked:

1. Bob bought a 3-cent postage stamp. He gave the clerk in the post office a dime. The clerk said, "3, 4, 5, 10 cents," when he counted the change he was giving Bob. What pieces of money did he give Bob? Was it the right amount?

2. Sally bought a box of red raspberries for 31 cents. She gave the clerk a half-dollar and received 4 pennies, 1 nickel, and 1 dime in change. How much money did she receive? The clerk said, "31, 32, 33, 34, 35, 40, 50 cents," as he handed her the money.

3. Anne bought an ice-cream soda which cost 17 cents. She gave the clerk a quarter. When he gave her the change, he said, "17, 18, 19, 20, 25 cents." How much change did Anne receive? What pieces of money did she get?

4. Jane gave the clerk a one-dollar bill when she bought a game which cost 65 cents. The clerk counted her change, and said, "65, 75, one dollar." What pieces of money did she receive? Did she get the right change?

► When counting change, first say the amount spent. Then count the coins that have the least value. If there are pennies, count them first. If the change is right, the last number you say is the same as the amount you gave the clerk.

Two-Place Quotients

Mr. James planted 276 peach trees in rows of 12 each. How many rows did he have? How many 12's in 276?

In this example you will have two figures in the quotient. Study the examples at the right as you read the following steps:

1. **Divide:** There are about as many 12's in 27 as there are 1's in 2. Write 2 in the quotient, above the 7 in 276.

$$\begin{array}{r} 2 \\ 12 \overline{)276} \end{array}$$

2. **Multiply** 12 by 2. Think, two 2's are 4. Write 4 below the 7 in 27. Then think, two 1's are 2. Write 2 below the 2 in 27.

$$\begin{array}{r} 2 \\ 12 \overline{)276} \\ \underline{24} \end{array}$$

3. **Compare** 24 with 27 to see that it is not larger than 27.

$$\begin{array}{r} 2 \\ 12 \overline{)276} \\ \underline{24} \\ 3 \end{array}$$

4. **Subtract** 24 from 27. There is a remainder of 3.

$$\begin{array}{r} 2 \\ 12 \overline{)276} \\ \underline{24} \\ 36 \end{array}$$

5. **Compare** 3 with 12 to see that the remainder is less than the divisor.

$$\begin{array}{r} 23 \\ 12 \overline{)276} \\ \underline{24} \\ 36 \\ \underline{36} \end{array}$$

6. **Bring down** 6 from 276, writing it to the right of the remainder, 3, and directly below the 6 in the dividend.

To find the second figure in the quotient, divide 36 by 12 and write 3 in the quotient. Then multiply, compare, and subtract.

Copy and divide:

A	B	C	D	E
1. $11 \overline{)143}$	$12 \overline{)168}$	$32 \overline{)992}$	$43 \overline{)946}$	$25 \overline{)575}$
2. $41 \overline{)492}$	$23 \overline{)483}$	$21 \overline{)861}$	$11 \overline{)187}$	$24 \overline{)768}$

Checking Your Work

You have already learned how to check easy division examples. All division examples are checked in the same way.

The example at the right has two figures in the divisor, and two in the quotient. What is the quotient? the remainder?

Notice how the work is checked. You found that there were twelve 62's in 746. How many are twelve 62's? Multiply 62 by 12. Add the remainder, 2, to the product. Is your answer 746?

If your work is correct, the answer will be the same as the dividend.

$$\begin{array}{r}
 12 \text{ R}2 \\
 62 \overline{)746} \\
 \underline{62} \\
 126 \\
 \underline{124} \\
 2 \\
 \text{Check} \\
 62 \\
 12 \\
 \underline{124} \\
 62 \\
 \underline{744} \\
 2 \\
 \underline{746}
 \end{array}$$

Copy the examples below. Divide and check.

A	B	C	D	E
1. $25 \overline{)525}$	$12 \overline{)397}$	$11 \overline{)167}$	$16 \overline{)179}$	$41 \overline{)953}$
2. $32 \overline{)675}$	$34 \overline{)748}$	$23 \overline{)529}$	$12 \overline{)494}$	$30 \overline{)962}$
3. $11 \overline{)785}$	$30 \overline{)644}$	$22 \overline{)264}$	$31 \overline{)961}$	$42 \overline{)885}$
4. $53 \overline{)636}$	$41 \overline{)697}$	$64 \overline{)980}$	$44 \overline{)754}$	$74 \overline{)814}$

Some quotients below are not correct. Find which are incorrect by checking. Then work those examples.

5. $82 \overline{)984}$	7. $42 \overline{)970}$	9. $23 \overline{)718}$	11. $72 \overline{)945}$
6. $62 \overline{)868}$	8. $51 \overline{)612}$	10. $32 \overline{)995}$	12. $41 \overline{)865}$

Practice with Even Division

Envelopes are usually sold in packages of 24. How many packages will 336 envelopes make?

Study the example at the right. First ask yourself, "How many 24's in 33?" Answer: "There are about as many 24's in 33 as there are 2's in 3."

$$\begin{array}{r} 14 \\ 24 \overline{)336} \\ \underline{24} \\ 96 \\ \underline{96} \\ 0 \end{array}$$

The first quotient figure is 1. Where is it written? Compare 24 with 33 to see that it is not larger than 33. Subtract. Is the 9 less than the divisor, 24? Bring down the 6. Write it to the right of the remainder, 9.

Now you are ready to divide again. Ask yourself, "How many 24's in 96?" Answer: "There are about as many 24's in 96 as there are 2's in 9."

The quotient is 14.

► There is no remainder. The division comes out even.

Copy, divide, and check:

A	B	C	D	E
1. $21 \overline{)714}$	$21 \overline{)924}$	$31 \overline{)806}$	$22 \overline{)308}$	$31 \overline{)713}$
2. $33 \overline{)429}$	$22 \overline{)506}$	$22 \overline{)946}$	$55 \overline{)605}$	$43 \overline{)516}$
3. $32 \overline{)704}$	$34 \overline{)714}$	$22 \overline{)748}$	$23 \overline{)736}$	$24 \overline{)312}$
4. $23 \overline{)966}$	$41 \overline{)492}$	$62 \overline{)806}$	$43 \overline{)903}$	$53 \overline{)901}$
5. $44 \overline{)528}$	$24 \overline{)576}$	$31 \overline{)992}$	$42 \overline{)924}$	$32 \overline{)416}$

Practice with Uneven Division

Richard and George packed 496 eggs into cartons that held 12 each. How many cartons did they need? How many 12's are there in 496?

Think, how many 12's in 49?

There are about as many 12's in 49 as there are 1's in 4. What figure is written in the quotient, above the 9 in 496?

Multiply 12 by 4. Where is the 48 written? How do you get the number 16? Now divide again. Is there a remainder? Does the division come out even?

$$\begin{array}{r} 41 \text{ R}4 \\ 12 \overline{)496} \\ \underline{48} \\ 16 \\ \underline{12} \\ 4 \end{array}$$

Copy the examples and quotients below. Complete the division by multiplying and subtracting.

A	B	C	D
1. $\begin{array}{r} 24 \text{ R}3 \\ 21 \overline{)507} \end{array}$	$\begin{array}{r} 26 \text{ R}13 \\ 31 \overline{)819} \end{array}$	$\begin{array}{r} 45 \text{ R}14 \\ 21 \overline{)959} \end{array}$	$\begin{array}{r} 43 \text{ R}7 \\ 22 \overline{)953} \end{array}$

Now copy, work, and check these examples:

2. $34 \overline{)725}$	$43 \overline{)700}$	$22 \overline{)318}$	$32 \overline{)680}$
3. $43 \overline{)478}$	$11 \overline{)377}$	$13 \overline{)288}$	$35 \overline{)425}$
4. $33 \overline{)835}$	$42 \overline{)608}$	$51 \overline{)808}$	$73 \overline{)895}$
5. $14 \overline{)296}$	$23 \overline{)494}$	$55 \overline{)835}$	$21 \overline{)369}$

6. One day Helen brought a box of 126 cupcakes to school. There were 41 people to serve. How many cupcakes did each one receive? How many extra cupcakes were there?

7. Fred had 165 shells in his collection. He put them into boxes, with 30 in each box. How many boxes did he fill? How many extra shells did he have?

Practice with Uneven Division

Richard and George packed 496 eggs into cartons that held 12 each. How many cartons did they need? How many 12's are there in 496?

Think, how many 12's in 49?

There are about as many 12's in 49 as there are 1's in 4. What figure is written in the quotient, above the 9 in 496?

Multiply 12 by 4. Where is the 48 written? How do you get the number 16? Now divide again. Is there a remainder? Does the division come out even?

$$\begin{array}{r} 41 \text{ R}4 \\ 12 \overline{)496} \\ \underline{48} \\ 16 \\ \underline{12} \\ 4 \end{array}$$

Copy the examples and quotients below. Complete the division by multiplying and subtracting.

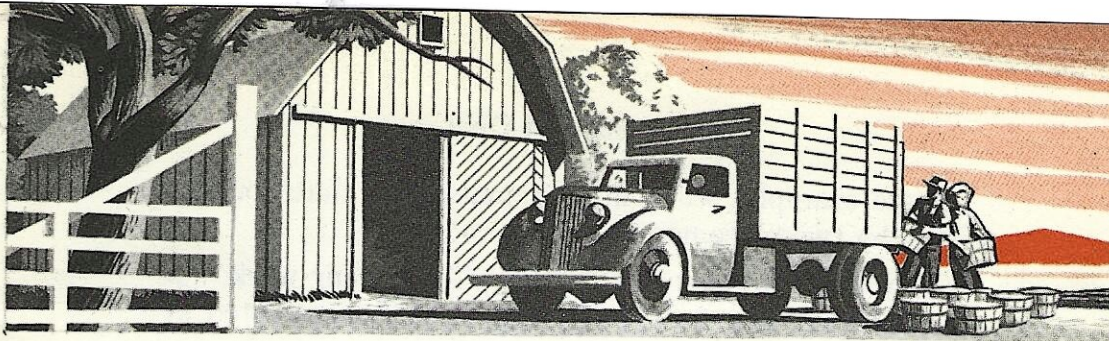
A	B	C	D
1. $\begin{array}{r} 24 \text{ R}3 \\ 21 \overline{)507} \end{array}$	$\begin{array}{r} 26 \text{ R}13 \\ 31 \overline{)819} \end{array}$	$\begin{array}{r} 45 \text{ R}14 \\ 21 \overline{)959} \end{array}$	$\begin{array}{r} 43 \text{ R}7 \\ 22 \overline{)953} \end{array}$

Now copy, work, and check these examples:

2. $34 \overline{)725}$	$43 \overline{)700}$	$22 \overline{)318}$	$32 \overline{)680}$
3. $43 \overline{)478}$	$11 \overline{)377}$	$13 \overline{)288}$	$35 \overline{)425}$
4. $33 \overline{)835}$	$42 \overline{)608}$	$51 \overline{)808}$	$73 \overline{)895}$
5. $14 \overline{)296}$	$23 \overline{)494}$	$55 \overline{)835}$	$21 \overline{)369}$

6. One day Helen brought a box of 126 cupcakes to school. There were 41 people to serve. How many cupcakes did each one receive? How many extra cupcakes were there?

7. Fred had 165 shells in his collection. He put them into boxes, with 30 in each box. How many boxes did he fill? How many extra shells did he have?



Dividing Larger Numbers

A Georgia farmer had 1365 baskets of peaches ready to ship. He hauled them by truck to the freight house. If the truck held 65 baskets, how many trips did he make?

$$\begin{array}{r}
 \text{Work} \\
 21 \\
 65 \overline{)1365} \\
 \underline{130} \\
 65 \\
 \underline{65} \\
 0
 \end{array}$$

$$\begin{array}{r}
 \text{Check} \\
 65 \\
 \underline{21} \\
 65 \\
 \underline{130} \\
 1365
 \end{array}$$

You see at once that neither 1 nor 13 can be divided by 65, so divide 136 by 65.

There are about as many 65's in 136 as there are 6's in 13. Write 2 over the 6 in the dividend. Multiply 65 by 2. Write 130 under the 136. Subtract 130 from 136. Bring down the 5. Divide again.

Notice how the work is checked.

Copy the examples below and divide. Check your work.

A	B	C	D	E
1. $23 \overline{)1196}$	$33 \overline{)1785}$	$64 \overline{)3456}$	$62 \overline{)3844}$	$34 \overline{)2079}$
2. $84 \overline{)4704}$	$62 \overline{)3164}$	$75 \overline{)3085}$	$52 \overline{)2968}$	$54 \overline{)4482}$
3. $42 \overline{)3486}$	$51 \overline{)3623}$	$32 \overline{)1674}$	$93 \overline{)6975}$	$52 \overline{)3172}$

Making Sure of Division

These examples will help you make sure that you can divide by two-place numbers.

Copy the examples and divide. Check your work. If you find that you need help, turn to the pages listed at the right.

Set I

A	B	C	D	
1. $10\overline{)60}$	$10\overline{)70}$	$10\overline{)97}$	$10\overline{)34}$	118
2. $30\overline{)60}$	$40\overline{)80}$	$50\overline{)62}$	$20\overline{)65}$	119
3. $60\overline{)480}$	$90\overline{)540}$	$70\overline{)495}$	$80\overline{)735}$	120
4. $12\overline{)48}$	$32\overline{)96}$	$42\overline{)168}$	$61\overline{)427}$	121

Set II

1. $81\overline{)328}$	$91\overline{)278}$	$72\overline{)219}$	$62\overline{)256}$	122
2. $93\overline{)465}$	$74\overline{)518}$	$83\overline{)591}$	$64\overline{)455}$	123
3. $81\overline{)492}$	$92\overline{)376}$	$63\overline{)210}$	$31\overline{)232}$	125, Set I
4. $64\overline{)576}$	$55\overline{)385}$	$75\overline{)610}$	$84\overline{)263}$	125, Set II

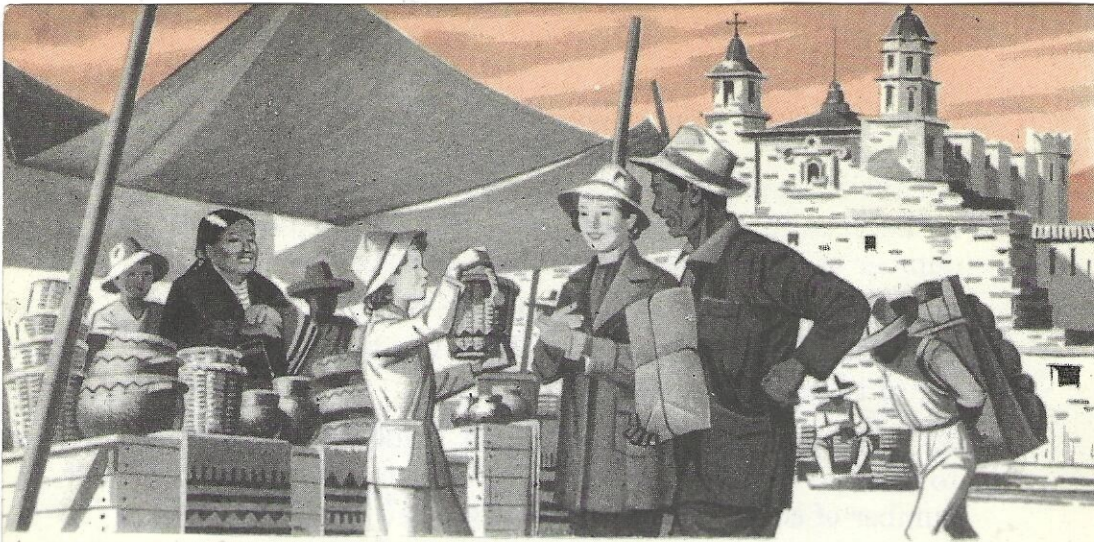
Set III

1. $40\overline{)840}$	$22\overline{)682}$	$32\overline{)389}$	$21\overline{)886}$	127 128
2. $24\overline{)504}$	$31\overline{)403}$	$34\overline{)748}$	$12\overline{)516}$	129
3. $34\overline{)415}$	$21\overline{)909}$	$11\overline{)467}$	$23\overline{)748}$	130
4. $64\overline{)3904}$	$92\overline{)4702}$	$33\overline{)2049}$	$94\overline{)4993}$	131

Using Division in Problems

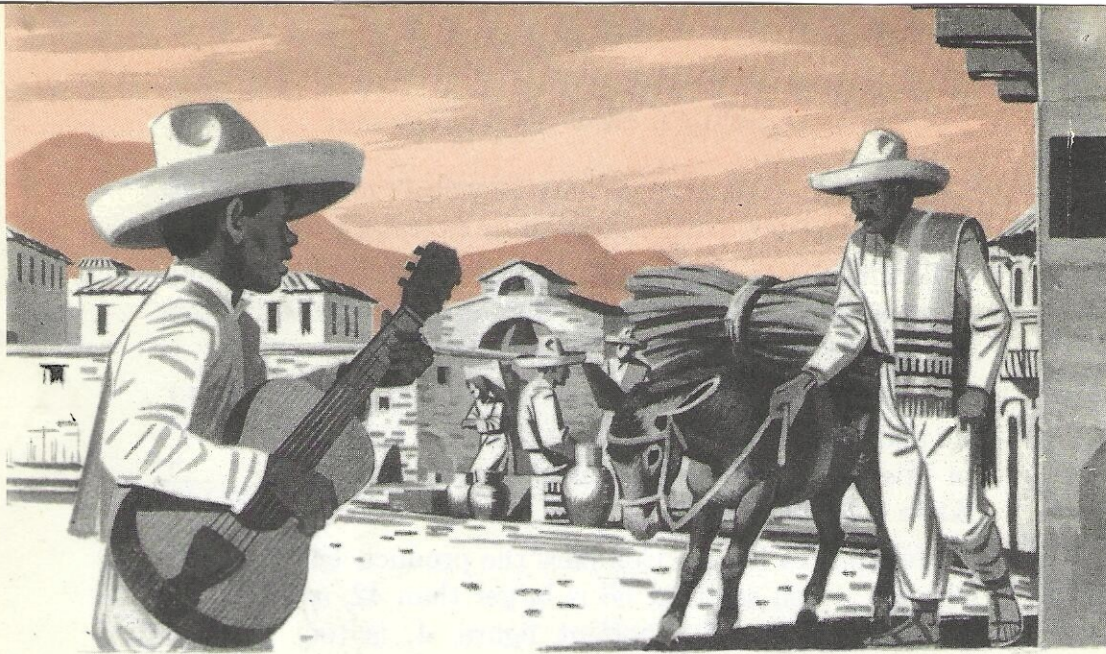
1. The 32 pupils in Jane's class brought 96 toys to school to be repaired for Christmas. What was the average number of toys to be repaired by a child?
2. Ted had 126 small branches or twigs of holly. He made them into 21 bunches. What was the average number of twigs in a bunch?
3. Twenty-one groups of children made 168 scrapbooks to send to children in hospitals. What was the average number of scrapbooks made by a group?
4. The children in the Lincoln School made 384 silver stars to decorate Christmas trees. They divided the stars so that they put the same number on each of 12 trees. How many stars were put on a tree?
5. The children in 10 schools filled 240 gift boxes to send to children in other lands. What was the average number of boxes filled at a school?
6. The children in one school filled 23 of the boxes. They paid \$5.75 for large bars of chocolate to put in the boxes. How much did the chocolate for each box cost?
7. The children in another school collected 775 pencils to put in the boxes. If they filled 25 boxes, how many pencils could they put in each box?





Visiting Mexico

1. Mr. and Mrs. Fisher and Sally made a trip to Mexico. They went by plane from Houston, Texas, to Mexico City. Mr. and Mrs. Fisher's round-trip tickets each cost \$86.40. Sally's ticket cost \$43.20. What did the three tickets cost?
2. There were 52 passengers on the plane. Each passenger could take 66 pounds of baggage. If each one took the full amount, how many pounds of baggage were carried?
3. They visited the Mexican markets. Sally bought a hand-woven basket for 40 cents, a pig bank for 5 cents, and a straw doll for 15 cents. How much money did she spend?
4. Sally also bought 10 post cards. If 2 cards cost 5 cents, how much did she pay for 10 cards?
5. Mrs. Fisher bought a silver pin for \$3.50 and a silver ring for \$2.75. How much did they cost together?
6. Mrs. Fisher also bought 6 blue Mexican water glasses at 15 cents each and a pitcher for 45 cents. How much did she spend for the glasses and pitcher?



7. Mr. Fisher bought a bright woolen Mexican blanket, called a *serape*, for \$7.50. How much change did he receive from \$10.00?

8. They learned that Mexico City was founded by the Aztec Indians in 1325. How many years ago was this city founded?

9. They were told that one of the mountain peaks near Mexico City is 17,882 feet high, and that another is 17,338 feet high. How much higher is one peak than the other?

10. The Fisher family met some friends who had driven to Mexico City from Dallas, Texas, a distance of 1200 miles. They had made the trip in 4 days. How many miles did they average a day?

11. Sally said that she thought she had learned as many as 300 Spanish words, with the help of a Spanish dictionary. Since she stayed in Mexico only 20 days, how many Spanish words, on the average, did she learn in a day?

Learning a New Step in Division

John said, "I have ridden my bicycle 42 miles in the last 14 days." How many miles did he average a day?

To find the answer you divide 42 by 14. This example shows a new step in division. Let us see how it is different from the examples you have been working.

Trial 1. Think, how many 14's in 42? There are about as many 14's in 42 as there are 1's in 4. In this example, 1 is used as the **trial divisor**. Write 4 above the 2 in 42.

Trial 1

$$\begin{array}{r} 4 \\ 14 \overline{)42} \\ \underline{56} \end{array}$$

Multiply 14 by 4. Compare the product, 56, with 42. You see that 56 is larger than 42, so you know that the quotient figure, 4, is too large. Divide again.

Trial 2

Trial 2. This time try 3. Multiply 14 by 3. The product is 42. When you compare, you see that 42 is not too large, so 3 is the correct quotient figure.

$$\begin{array}{r} 3 \\ 14 \overline{)42} \\ \underline{42} \end{array}$$

In the examples you have been working up to this time, the first quotient figure which you tried has probably been the correct one. Now you see that sometimes the first figure you try is incorrect.

► When you multiply the divisor by the quotient figure, it is important to compare the product with the figures in the dividend that you are using. If the product is too large, the quotient figure is too large.

Copy, divide, and check:

A	B	C	D	E
1. $15 \overline{)30}$	$14 \overline{)56}$	$23 \overline{)184}$	$13 \overline{)52}$	$24 \overline{)168}$
2. $12 \overline{)60}$	$14 \overline{)42}$	$15 \overline{)60}$	$12 \overline{)96}$	$34 \overline{)272}$



There are 175 boys at Camp Culver. In the camp there are 25 cabins of the same size. How many boys live in each cabin?

Trial 1. Divide 175 by 25. Think, how many 25's in 175? There are about as many 25's in 175 as there are 2's in 17. In this example, 2 is used as the trial divisor. Write 8 in the quotient, above the 5 in 175.

Trial 1

$$\begin{array}{r} 8 \\ 25 \overline{)175} \\ \underline{200} \end{array}$$

Multiply 25 by 8. What is the product? Compare 200 with 175. Is it larger? What does this tell you about the quotient figure you used?

Trial 2

Trial 2. Since 8 is too large, try 7. Multiply 25 by 7. Is 7 the correct figure to use? How do you know?

$$\begin{array}{r} 7 \\ 25 \overline{)175} \\ \underline{175} \end{array}$$

Copy, divide, and check:

A	B	C	D	E
3. $25 \overline{)150}$	$13 \overline{)65}$	$24 \overline{)120}$	$35 \overline{)245}$	$24 \overline{)144}$
4. $24 \overline{)192}$	$35 \overline{)210}$	$44 \overline{)264}$	$23 \overline{)161}$	$44 \overline{)352}$

Practicing Division

On pages 136 and 137 you have seen that it is not always possible to choose the correct quotient figure the first time. You may have to try a second time, but with practice you can learn to do some of the figuring without writing.

Look at the example at the right.

How many 11's in 51? If you try 5 as a quotient figure, you know, without writing anything, that the product will be too large, for five 11's are 55. When you compare 55 with 51, you see that it is too large.

$$\begin{array}{r} 4 \\ 11 \overline{)513} \\ \underline{44} \\ 73 \end{array}$$

Now, when you try 4 in the quotient, you have the right figure. You did your thinking before you did any writing.

How many 11's in 73? If you try 7, first multiply without writing. Is it the correct figure? What figure will you try next? What is the remainder?

$$\begin{array}{r} 46 \text{ R}7 \\ 11 \overline{)513} \\ \underline{44} \\ 73 \\ \underline{66} \\ 7 \end{array}$$

You have to multiply the divisor by the quotient figure in order to find out whether the figure you have used is the right one. If the product is too large, the quotient figure is too large. Then try the next smaller figure.

Copy, divide, and check:

A	B	C	D	E
1. $12 \overline{)336}$	$11 \overline{)822}$	$21 \overline{)1802}$	$13 \overline{)445}$	$44 \overline{)1602}$
2. $11 \overline{)953}$	$12 \overline{)884}$	$23 \overline{)1880}$	$34 \overline{)652}$	$53 \overline{)1002}$

More Two-Place Quotients

Mr. Martin sells honey to city markets. He has 24 beehives on his farm. In the fall, when he collected the honey from the hives, he had 864 pounds. On the average, how many pounds of honey did he get from a hive?

Study the work below as you read the directions and questions which follow.

First Part

$$\begin{array}{r} 4 \\ 24 \overline{)864} \\ \underline{96} \end{array}$$

$$\begin{array}{r} 3 \\ 24 \overline{)864} \\ \underline{72} \\ 14 \end{array}$$

Second Part

$$\begin{array}{r} 37 \\ 24 \overline{)864} \\ \underline{72} \\ 144 \\ \underline{168} \end{array}$$

$$\begin{array}{r} 36 \\ 24 \overline{)864} \\ \underline{72} \\ 144 \\ \underline{144} \end{array}$$

First Part. Why would you try 4 as the first quotient figure? What is the product of 4 times 24? You see that the product is too large; you cannot subtract 96 from 86. Then try the next smaller quotient figure, which is 3. How do you know that this is the correct figure?

Second Part. Now divide 144 by 24. Why would you try 7 as the second quotient figure? How do you know that 7 is too large? What figure should you try next? Is this the right one? Why?

Mr. Martin collected an average of 36 pounds of honey from a hive.



First Part. Study the example at the right. Why is 4 an incorrect quotient figure? Why is 3 the correct figure?

First Part	
$\begin{array}{r} 4 \\ 22 \overline{)822} \\ \underline{88} \end{array}$	$\begin{array}{r} 3 \\ 22 \overline{)822} \\ \underline{66} \\ 162 \end{array}$

Second Part. The second time you divide, can you use 8 as a quotient figure? Why not? Can you use 7? This example has a remainder of 8.

Second Part	
$\begin{array}{r} 38 \\ 22 \overline{)822} \\ \underline{66} \\ 162 \\ \underline{176} \end{array}$	$\begin{array}{r} 37 \text{ R}8 \\ 22 \overline{)822} \\ \underline{66} \\ 162 \\ \underline{154} \\ 8 \end{array}$

► Notice how important it is to compare the product each time with the **partial dividend**; that is, with the part of the dividend which you are using.

Copy the following examples. Divide and check.

A	B	C	D	E
1. $33 \overline{)604}$	$45 \overline{)821}$	$45 \overline{)813}$	$13 \overline{)312}$	$25 \overline{)812}$
2. $55 \overline{)1504}$	$14 \overline{)599}$	$45 \overline{)1675}$	$34 \overline{)1912}$	$24 \overline{)1782}$
3. $34 \overline{)1232}$	$24 \overline{)716}$	$34 \overline{)1632}$	$24 \overline{)1347}$	$55 \overline{)2069}$
4. $15 \overline{)486}$	$75 \overline{)2914}$	$75 \overline{)1422}$	$64 \overline{)1213}$	$65 \overline{)2439}$

KEEPING ON YOUR TOES

How well can you multiply without writing?

- | | | |
|----------------------|----------------------|----------------------|
| 1. $2 \times 36 = ?$ | 4. $3 \times 54 = ?$ | 7. $4 \times 24 = ?$ |
| 2. $5 \times 25 = ?$ | 5. $2 \times 27 = ?$ | 8. $3 \times 78 = ?$ |
| 3. $6 \times 32 = ?$ | 6. $4 \times 15 = ?$ | 9. $2 \times 45 = ?$ |

Think before You Write

You have found that you cannot always choose the correct quotient figure the first time. In some examples you may have to try two or more times before you get the correct figure. If you learn to use good judgment in estimating quotient figures, you will not make so many trials. Try to do some of the figuring without writing.

Look at the example at the right.

Trial 1. How many 34's in 61? You might write 2 in the quotient. Then, when you multiply 34 by 2, you find the product is 68. When you compare 68 with 61, you find it is too large. That means starting again.

Trial 1

$$\begin{array}{r} 2 \\ 34 \overline{)612} \\ \underline{68} \end{array}$$

Trial 2. If you think before you write, you can avoid such a mistake. You know that two 30's are 60. But 34 is 4 more than 30, and the partial dividend, 61, is only 1 more than 60. That tells you the quotient figure, 2, is too large, so try 1.

Trial 2

$$\begin{array}{r} 18 \\ 34 \overline{)612} \\ \underline{34} \\ 272 \\ \underline{272} \end{array}$$

When you divide 272 by 34, you might think, there are nine 3's in 27. But again you see that 34 is much larger than 30, and the dividend is only 272. Then you know that 9 is too large. What quotient figure will you try next?

Copy the following examples. Divide and check.

A	B	C	D	E
1. $42 \overline{)240}$	$32 \overline{)121}$	$45 \overline{)162}$	$54 \overline{)152}$	$63 \overline{)302}$
2. $63 \overline{)5028}$	$34 \overline{)1664}$	$73 \overline{)6320}$	$54 \overline{)3211}$	$83 \overline{)6220}$



Everyday Problems

Here are problems that some boys and girls had to solve outside of school. How would you solve them?

1. Anne takes the bus to and from school. The fare each way is 7 cents. Her lunches at school average 35 cents a day. How much money does Anne spend each day? How much money does she spend in a school week?
2. Fred had \$1.10. He bought a plant for his mother that cost 85 cents. He wanted to buy a 27-cent ticket to the children's circus. Did he have enough money left to buy the ticket? If not, how much more did he need?
3. Jane went to play with Helen at 3:30 P.M. Her mother said she could stay an hour and a half. What time did she have to come home?
4. Mary's new fall coat cost \$24.75, her hat \$3.50, her new dress \$6.98, and her shoes \$5.95. How much did her new clothes cost?

Zero in Ones' Place in the Quotient

1. There were 480 cars in a parking lot, parked in 12 rows. How many cars were in each row?

To find the answer, you divide 480 by 12.

First, you find how many 12's there are in 48.
Write 4 in the quotient, above the 8 in 48.
Multiply 12 by 4. Where is the 48 written?
Is there a remainder when you subtract?

$$\begin{array}{r} 40 \\ 12 \overline{)480} \\ \underline{48} \\ 0 \end{array}$$

But remember that you are dividing 480 by 12. You must use the next figure in 480, which is 0. The zero shows that there is nothing to divide. Then what figure will you write in the quotient?

There were 40 cars in each row.

2. In a large city parking lot there were 1600 cars. They were parked in 32 rows. How many cars were in each row?

Divide 1600 by 32 to find the answer.

Why do you write 5 in the quotient?

How do you get the 160?

What is the next figure in the dividend?

The 0 may be brought down or this step may be omitted. Now what figure do you write in the quotient?

How many cars were in each row?

$$\begin{array}{r} 50 \\ 32 \overline{)1600} \\ \underline{160} \\ 0 \end{array}$$

► Always write a figure in the quotient each time you use another figure in the dividend.

Copy, divide, and check:

	A	B	C	D	E
3.	$33 \overline{)990}$	$24 \overline{)480}$	$11 \overline{)880}$	$25 \overline{)750}$	$35 \overline{)700}$
4.	$45 \overline{)1350}$	$34 \overline{)2720}$	$23 \overline{)1610}$	$61 \overline{)1220}$	$95 \overline{)5700}$



5. One morning Dan and his father gathered 32 pumpkins to take to market. Their load weighed 975 pounds. What was the average weight of these pumpkins?

There are about as many 32's in 97 as there are 3's in 9. The first quotient figure is 3. Where should the 3 be written? Multiply 32 by 3. Compare the product, 96, with 97. Is there a remainder?

$$\begin{array}{r} 30 \\ 32 \overline{)975} \\ \underline{96} \\ 15 \end{array}$$

Bring down the 5 from 975. Write it to the right of the 1. There are no 32's in 15, so write 0 in the quotient.

The average weight of the pumpkins was about 30 pounds. We say "about" 30 pounds, because there is a remainder.

Copy and divide. Be sure to write 0 in the quotient when it is needed. If there is a remainder, write it after the quotient.

A	B	C	D	E
6. $23 \overline{)1624}$	$31 \overline{)1570}$	$22 \overline{)1778}$	$25 \overline{)500}$	$63 \overline{)1890}$
7. $24 \overline{)1215}$	$71 \overline{)6390}$	$92 \overline{)7392}$	$34 \overline{)1372}$	$41 \overline{)2460}$
8. $81 \overline{)7290}$	$54 \overline{)2181}$	$35 \overline{)2125}$	$44 \overline{)2226}$	$72 \overline{)5054}$

Keeping in Practice

Set I

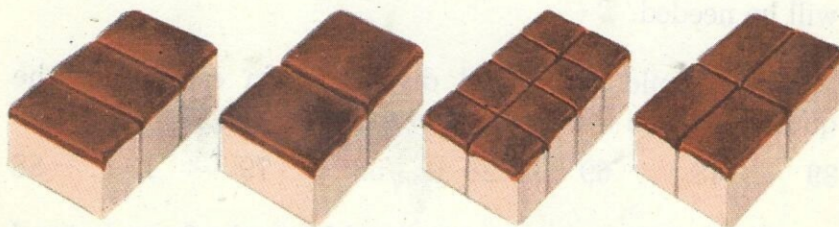
Copy and work the examples below. Check your work.

1. $3006 \div 5 = ?$
2. $75 \times \$4.95 = ?$
3. Divide \$29.40 by 7.
4. Subtract 2,887 from 7,442.
5. $48 + 89 + 72 = ?$
6. Multiply 409 by 80.
7. $\$10.04 - \$3.95 = ?$
8. Add \$2.50, \$.37 and \$.09.
9. $603 \times \$9.45 = ?$
10. $24 \overline{)1680}$
11. Multiply 2,846 by 35.
12. $33 \overline{)2409}$
13. $\$6.59 + \$8.37 + \$2.64 = ?$
14. $\$50.25 - \$19.67 = ?$
15. $2010 \div 54 = ?$
16. $700 \times 826 = ?$

Set II

Answer the following questions:

1. In the example $64 \div 8$, which number is the dividend?
2. What do you call the answer for the example 27×308 ? Which number is the multiplier?
3. Look at the cakes pictured below. Which one has been divided into fourths? thirds? halves? eighths?



4. Which is more, $\frac{1}{2}$ or $\frac{1}{4}$ of a cake?
5. Which is more, $\frac{1}{3}$ or $\frac{1}{4}$ of a cake?
6. Write a fraction that is equal to $\frac{4}{8}$.

Divisors Ending in 8 or 9

A group of 29 children were making programs for a school assembly. They needed 415 programs. How many did each child have to make?

Trial 1. To find the answer to the question, divide 415 by 29. It is not difficult to divide by numbers ending in 8 or 9.

If you use 2 as the trial divisor, you will think, there are about as many 29's in 41 as there are 2's in 4. You will write 2 in the quotient. When you multiply, you will find that this figure is too large.

Trial 1

$$\begin{array}{r} 2 \\ 29 \overline{)415} \\ \underline{58} \end{array}$$

Trial 2

$$\begin{array}{r} 14 \\ 29 \overline{)415} \\ \underline{29} \\ 125 \\ \underline{116} \\ 9 \end{array}$$

Trial 2. Look at the divisor, 29, again. This divisor is nearer 30 than 20. Then it is wise to use 3 as the trial divisor and think, there are probably as many 29's in 41 as there are 3's in 4.

When you divide the second time think, there are about as many 29's in 125 as there are 3's in 12. The second quotient figure is 4.

Each child will have to make 14 programs, and 9 more will be needed.

What would your trial divisor be in estimating the quotient, when these are the divisors?

39 48 69 28 58 79 19 88

► If the divisor ends in 8 or 9, add 1 to the figure in tens' place before you use it as a trial divisor. If you learn to do this first, you will find that the trial quotient is more likely to be correct.

Using Divisors Ending in 8 or 9

Copy the examples below and divide. Check your work.

A	B	C	D	E
1. $19\overline{)483}$	$38\overline{)715}$	$49\overline{)1828}$	$79\overline{)4923}$	$28\overline{)2764}$
2. $88\overline{)1690}$	$58\overline{)4322}$	$89\overline{)4325}$	$39\overline{)2017}$	$48\overline{)1271}$
3. $29\overline{)2429}$	$18\overline{)1200}$	$98\overline{)8010}$	$69\overline{)2562}$	$78\overline{)7345}$

You have learned that when the divisor ends in 8 or 9, you can add 1 to the figure in tens' place before you use it as a trial divisor. Even though you do this, however, in some examples you may have to try more than one quotient figure before you get the correct one.

A	B	C	D	E
4. $59\overline{)5386}$	$89\overline{)1337}$	$28\overline{)2412}$	$19\overline{)799}$	$78\overline{)4995}$
5. $48\overline{)1107}$	$49\overline{)889}$	$98\overline{)7551}$	$18\overline{)688}$	$79\overline{)7193}$
6. $68\overline{)3538}$	$39\overline{)2304}$	$49\overline{)639}$	$29\overline{)728}$	$38\overline{)1798}$
7. $29\overline{)1494}$	$58\overline{)4027}$	$39\overline{)2720}$	$68\overline{)2678}$	$88\overline{)2329}$
8. $69\overline{)4281}$	$49\overline{)2430}$	$78\overline{)2350}$	$99\overline{)7487}$	$79\overline{)6600}$
9. $28\overline{)1500}$	$49\overline{)4426}$	$59\overline{)3000}$	$78\overline{)2141}$	$69\overline{)1300}$

Using Divisors Ending in 6 or 7

When the divisor ends in 6 or 7, you can add 1 to the figure in tens' place before you use it as the trial divisor. This is what you have learned to do when the divisor ends in 8 or 9.

Look at the example at the right. You see the divisor, 27, is nearer 30 than 20. Then it is sensible to say, "There are probably as many 27's in 123 as there are 3's in 12."

When you divide the second time, you think, "There are about as many 27's in 151 as there are 3's in 15."

$$\begin{array}{r}
 45 \text{ R}16 \\
 27 \overline{)1231} \\
 \underline{108} \\
 151 \\
 \underline{135} \\
 16
 \end{array}$$

► Even though you use this method to get the trial divisor, you will not always find the correct quotient figure the first time. You are likely, however, to find it more quickly and with fewer trials.

Copy and divide. Check your work.

A	B	C	D	E
1. $46 \overline{)2145}$	$67 \overline{)4347}$	$86 \overline{)6259}$	$47 \overline{)3224}$	$27 \overline{)1355}$
2. $37 \overline{)2711}$	$56 \overline{)2119}$	$87 \overline{)5786}$	$57 \overline{)3440}$	$76 \overline{)3699}$
3. $27 \overline{)1971}$	$36 \overline{)2974}$	$47 \overline{)1514}$	$86 \overline{)3220}$	$67 \overline{)3650}$
4. $66 \overline{)4513}$	$88 \overline{)4290}$	$97 \overline{)2749}$	$79 \overline{)5170}$	$68 \overline{)1800}$
5. $59 \overline{)3409}$	$48 \overline{)3109}$	$26 \overline{)978}$	$56 \overline{)3664}$	$77 \overline{)3429}$

Other Divisors in the Teens

When you divide by the numbers 13 to 17, you often have to try several times before you find the correct quotient figure.

1. Mr. Moore's car runs 13 miles on a gallon of gasoline. How many gallons will it take to drive to a town 91 miles away?

Divide 91 by 13. You might expect the first quotient figure to be 9. Multiply 13 by 9. Is 9 too large? Try 8. Is it too large? Is 7 the right quotient figure? How do you know?

$$\begin{array}{r} 7 \\ 13 \overline{)91} \\ \underline{91} \end{array}$$

2. In the example at the right you might think of the 17 as 20, and use 2 as the trial divisor.

Then at first you would probably try 4 as the quotient figure. You may think, however, that 4 is too small, for the dividend is almost 90 and the divisor, 17, is less than 20. Then it would be sensible to try 5. Is this the correct quotient figure?

$$\begin{array}{r} 5 \text{ R}2 \\ 17 \overline{)87} \\ \underline{85} \\ 2 \end{array}$$

Copy the examples below. Divide and check.

A	B	C	D	E
3. $15 \overline{)60}$	$14 \overline{)85}$	$17 \overline{)105}$	$13 \overline{)78}$	$16 \overline{)84}$
4. $13 \overline{)69}$	$16 \overline{)115}$	$14 \overline{)126}$	$15 \overline{)125}$	$17 \overline{)153}$
5. $15 \overline{)107}$	$17 \overline{)136}$	$16 \overline{)146}$	$14 \overline{)119}$	$13 \overline{)105}$
6. $13 \overline{)405}$	$15 \overline{)345}$	$17 \overline{)905}$	$16 \overline{)688}$	$15 \overline{)818}$
7. $14 \overline{)476}$	$17 \overline{)701}$	$16 \overline{)419}$	$14 \overline{)738}$	$13 \overline{)832}$

Practicing Division

Set I

Find the quotient figure in each of the following examples:

A	B	C	D	E
1. $18\overline{)60}$	$19\overline{)93}$	$19\overline{)129}$	$18\overline{)45}$	$19\overline{)81}$
2. $19\overline{)149}$	$18\overline{)85}$	$18\overline{)120}$	$19\overline{)160}$	$18\overline{)140}$

3. At Joan's party there were 60 sandwiches to be divided among 19 children. How many sandwiches did each child have? How many extra sandwiches were there?

4. At 18 cents apiece, how many toy airplanes can Donald buy for 90 cents?

5. The Park Hotel has 18 floors with the same number of rooms on each floor. If there are 450 rooms, how many rooms are there on a floor?

Set II

Copy and divide. Check your work.

A	B	C	D	E
1. $25\overline{)576}$	$54\overline{)4914}$	$37\overline{)1192}$	$43\overline{)1462}$	$75\overline{)5400}$
2. $82\overline{)2050}$	$34\overline{)1197}$	$65\overline{)3445}$	$73\overline{)3358}$	$83\overline{)2241}$
3. $63\overline{)1453}$	$43\overline{)3916}$	$34\overline{)1462}$	$26\overline{)1261}$	$33\overline{)1683}$
4. $29\overline{)1252}$	$37\overline{)1975}$	$55\overline{)3312}$	$61\overline{)2521}$	$48\overline{)2600}$

What Process Should You Use?

Deciding what process to use in solving a problem means deciding whether to add, subtract, multiply, or divide.

Copy the numbers of the following questions and write what you should do to answer each one.

1. Wisconsin has 7,500 lakes and Maine has 2,500. How will you find how many more lakes Wisconsin has than Maine?
2. If you know the price of one gallon of gasoline, how can you find the number of gallons you could buy for \$1.00?
3. Sally keeps a record of the money she saves each week. How can she find the total amount saved in 4 weeks?
4. Henry saw a sport coat he liked for \$10.49 and another for \$7.98. How would he find the difference in price?
5. When Fred and Jack sold vegetables from their garden, they kept a record of all the money they received. How would they find the total amount received?
6. If there are 4 cups of flour in a pound, how would you find the number of cups in a 25-pound bag of flour?
7. Mt. Whitney is 14,495 feet high, and Mt. Washington is 6,288 feet high. How will you find how many feet higher Mt. Whitney is than Mt. Washington?
8. At a food-sale, there were 8 dozen muffins for sale. How would you find the number of muffins for sale?
9. Marie had \$25. She spent one-fourth of it for a camera. How do you find the amount she spent?
10. Ted has saved \$17.00, and Jack has saved \$8.25. How do you find how much less Jack has saved than Ted?
11. In one school there are 948 pupils, in another 758, and in a third 550. How can you find the number of pupils in the three schools?

Dividing Money

1. Mrs. Miller paid \$7.68 for 24 quarts of strawberries. How much did she pay for each quart?

To find the answer, divide \$7.68 by 24.

You know that you divide dollars and cents just as you divide other numbers. The answer will be money, because the question asks, "How much did she pay for each quart?"

$$\begin{array}{r} \$32 \\ 24 \overline{) \$7.68} \\ \underline{72} \\ 48 \\ \underline{48} \\ 00 \end{array}$$

Put a dollar sign and a point before the 3 in the quotient, for there must be two places for cents at the right of the point. This point will come directly above the point in the dividend.

When you divide money there may be a remainder, just as there is in other division examples.

2. Study the example at the right. The point is placed in the quotient so that there are two places to the right for cents. Is it directly above the point in the dividend? What is the quotient? There is a remainder of how many cents?

$$\begin{array}{r} \$27 \text{ R}5\text{c} \\ 10 \overline{) \$2.75} \\ \underline{20} \\ 75 \\ \underline{70} \\ 5 \end{array}$$

Copy these examples and divide. Check your work.

- | A | B | C | D | E |
|------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 3. $21 \overline{) \$6.58}$ | $54 \overline{) \$24.30}$ | $40 \overline{) \$14.62}$ | $35 \overline{) \$11.25}$ | $45 \overline{) \$35.55}$ |
| 4. $58 \overline{) \$14.06}$ | $64 \overline{) \$35.76}$ | $46 \overline{) \$44.62}$ | $56 \overline{) \$17.38}$ | $52 \overline{) \$35.88}$ |
| 5. $22 \overline{) \$15.84}$ | $58 \overline{) \$28.42}$ | $73 \overline{) \$46.75}$ | $50 \overline{) \$25.50}$ | $93 \overline{) \$88.35}$ |
| 6. $56 \overline{) \$47.60}$ | $63 \overline{) \$58.64}$ | $20 \overline{) \$17.28}$ | $85 \overline{) \$45.96}$ | $74 \overline{) \$15.54}$ |



Finding Averages

1. The Fairview County 4-H Club had a sale. Doris and Mary sold 28 glasses of jelly they had made. They received \$9.80 in all. What was the average price received per glass?
2. Jerry Brown sold 8 birdhouses for \$15.60. What was the average price received for the birdhouses?
3. Two 4-H Club boys sold 33 sheep. The total weight of the sheep was 2,937 lb. What was the average weight of the sheep?
4. One sheep weighing 96 lb. sold for \$50.88. What was the average price per pound?
5. The children in Central School were collecting money to buy new phonograph records. The 35 children in Miss Lee's class gave \$8.75. What was the average amount given by the children?
6. Mr. Clyne sold 52 turkeys which weighed a total of 728 pounds. What was the average weight of the turkeys?
7. Wilson's Store employs 98 people. The weekly payroll is \$4,410. What is the average weekly pay?
8. Joan's mother said that last year they spent \$780 for food. What was the average amount spent for food in a month?

Something New about Quotient Figures

1. In the example at the right you will discover something new. When you think, there are about as many 33's in 316, as there are 3's in 31, the answer is 10. You know that ten 33's are 330, and the partial dividend is only 316. Try 9.

$$\begin{array}{r} 96 \\ 33 \overline{) 3168} \\ \underline{297} \\ 198 \\ \underline{198} \end{array}$$

Multiply 33 by 9. What is the product? Subtract. Is 9 the correct quotient figure? How do you get the number 198? To divide this time, ask yourself, how many 3's in 19? Is 6 correct? How do you know?

2. Now look at the next example. At first it looks as if there might be ten 34's in 304, but you know that ten 34's are 340. Then try 9; $9 \times 34 = 306$. But 306 is more than 304. Next try 8; $8 \times 34 = 272$. Is 8 the correct figure? How do you know?

$$\begin{array}{r} 89 \\ 34 \overline{) 3042} \\ \underline{272} \\ 322 \\ \underline{306} \\ 16 \end{array}$$

When you divide 322 by 34, what quotient figure should you try first? Is it the right one? What is the remainder?

The quotient figure can never be more than 9.

Copy the examples below. Divide and check.

A	B	C	D	E
3. $46 \overline{) 414}$	$23 \overline{) 207}$	$53 \overline{) 502}$	$36 \overline{) 328}$	$45 \overline{) 405}$
4. $25 \overline{) 2053}$	$31 \overline{) 3038}$	$24 \overline{) 2186}$	$41 \overline{) 4059}$	$36 \overline{) 3240}$
5. $56 \overline{) 5320}$	$74 \overline{) 7188}$	$65 \overline{) 6048}$	$46 \overline{) 4188}$	$83 \overline{) 8134}$
6. $38 \overline{) 3146}$	$42 \overline{) 4056}$	$62 \overline{) 6014}$	$85 \overline{) 8340}$	$45 \overline{) 4005}$

Correcting Mistakes

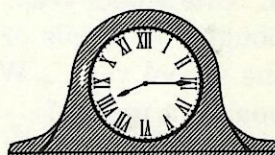
In division, it is important to work carefully and be able to find any mistakes you may have made.

Find the mistakes in the examples below. Copy each example and work it correctly. Check your work by multiplication.

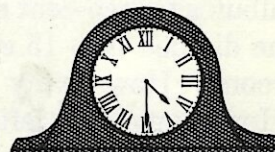
A	B	C	D
$\begin{array}{r} 74 \\ 71 \overline{)4554} \\ \underline{427} \\ 284 \\ \underline{284} \\ 0 \end{array}$	$\begin{array}{r} 5 \\ 65 \overline{)3250} \\ \underline{325} \\ 0 \end{array}$	$\begin{array}{r} 72 \\ 59 \overline{)4259} \\ \underline{413} \\ 129 \\ \underline{118} \\ 11 \end{array}$	$\begin{array}{r} 4 \text{ R}6 \\ 85 \overline{)3406} \\ \underline{340} \\ 6 \end{array}$

KEEPING ON YOUR TOES

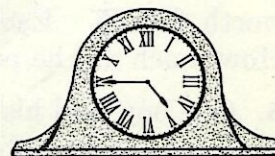
1. Betty usually practices on the piano in the morning from 8 o'clock until 8:15. What part of the distance around the clockface does the minute hand go in that time?



2. She practices from 4 o'clock until 4:30 in the afternoon. What part of the way around the clockface does the minute hand go in 30 minutes?



3. Jane practices 45 minutes. What part of the distance around the clockface does the minute hand go in that time? How far would it go if she practiced one hour?



4. It took John 20 minutes to do an errand for his mother. What part of the way around the clockface does the minute hand go in that time? This is what part of an hour?



Using Division in Problems

Read these problems carefully. Divide. Check your work by multiplying.

1. Monday is Stamp Day in Park School. On that day, the children buy United States Savings Stamps. One day a group of 27 pupils bought \$9.45 worth of stamps. What was the average amount spent per pupil?
2. One school year, 135 United States Savings Bonds were bought by pupils of the school. There were 9 months in the school year. What was the average number of bonds bought a month?
3. At the beginning of the term, Ted helped give out the albums for ten-cent stamps. There were 500 albums which he divided into 15 equal groups, one group for each classroom. How many albums did each classroom receive? How many were left over?
4. At the end of one school year, Vincent had 61 stamps worth \$15.25. Each stamp had cost the same amount. How much did he pay for each stamp?
5. One boy said his family had paid \$262.50 for 14 bonds. If each bond cost the same, what was the price of each?
6. At the end of 10 years the 14 bonds will be worth \$87.50 more than they are worth now. How much more will each bond be worth?

Three-Place Quotients

1. If an airplane flew 2,568 miles in 12 hours, how many miles an hour did the plane average?

Look at the example at the right.

You divide 2568 by 12 to find the answer.
First divide 25 by 12. Multiply and subtract.

How do you get the number 16?

Divide, multiply, compare, subtract, and bring down the 8.

In this example there will be three figures in the quotient. Now you are ready to divide for the third time. Why do you write 4 in the quotient?

How can you prove that 214 miles an hour is the correct answer?

2. If an airplane flew 11,820 miles in 60 hours, how many miles an hour did the plane average?

Study the example at the right. Why was the 1 written above the 8 in 11820? How many times do you have to divide to get the answer?

Is the work correct?

Copy the following examples. Divide and check.

A

B

C

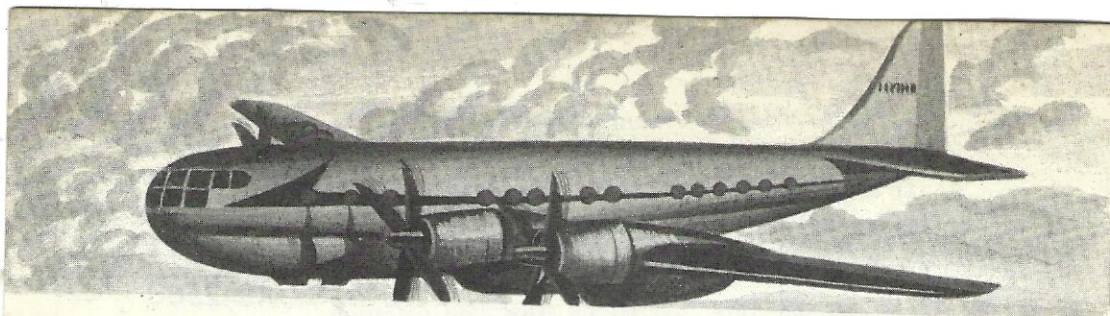
D

E

3. $23 \overline{)4899}$ $31 \overline{)9672}$ $22 \overline{)4752}$ $42 \overline{)8905}$ $51 \overline{)7962}$

4. $41 \overline{)38991}$ $33 \overline{)10956}$ $43 \overline{)13674}$ $93 \overline{)40176}$ $72 \overline{)31326}$

5. $70 \overline{)64750}$ $63 \overline{)33019}$ $52 \overline{)34892}$ $40 \overline{)33285}$ $73 \overline{)33653}$



Zero in Tens' Place in the Quotient

Arthur took a trip by plane from London to New York, a distance of 3,452 miles. The trip took 17 hours. How many miles per hour did the plane average?

In this example there is one new thing to watch for when you divide the second time.

Divide 34 by 17. Multiply, and compare the product with the partial dividend. There is no remainder.

$$\begin{array}{r} 203 \\ 17 \overline{) 3452} \\ \underline{34} \\ 52 \\ \underline{51} \\ 1 \end{array}$$

Bring down the 5. You cannot divide 5 by 17. What will you write in the quotient?

Then bring down the 2. Now divide 52 by 17. What figure should you write in the quotient? What is the remainder?

The airplane flew at an average speed of slightly more than 203 miles per hour. We say, "slightly more than 203 miles per hour" because there is a remainder.

Copy these examples and divide. Remember to write 0 in the quotient when it is needed.

A	B	C	D	E
1. $23 \overline{) 4692}$	$36 \overline{) 7246}$	$21 \overline{) 8484}$	$33 \overline{) 6641}$	$24 \overline{) 7248}$
2. $26 \overline{) 7878}$	$41 \overline{) 8289}$	$25 \overline{) 5075}$	$42 \overline{) 4284}$	$32 \overline{) 28850}$
3. $33 \overline{) 13266}$	$53 \overline{) 21253}$	$63 \overline{) 12665}$	$46 \overline{) 23046}$	$67 \overline{) 26867}$

4. An airplane flew from San Francisco to Melbourne, Australia, a distance of 8,043 miles, in 39 hours of flying time. What was the average speed of the plane in miles per hour?

This example is almost like the one on page 158, except that when you subtract the first time you have a remainder.

$$\begin{array}{r} 206 \\ 39 \overline{)8043} \\ \underline{78} \\ 243 \\ \underline{234} \\ 9 \end{array}$$

Bring down the 4 and you have the number 24. You cannot divide 24 by 39. What will you write in the quotient?

Then bring down the 3. Now you have 243 to divide by 39.

Since there is a remainder of 9, we say the plane traveled at a speed of a little more than 206 miles per hour.

5. An airplane flew from New York to Oslo, Norway, a distance of 4,002 miles, in 20 hours. How many miles an hour did the airplane average?

Sometimes, as in the example at the right, you will have to write two 0's in the quotient.

$$\begin{array}{r} 200 \\ 20 \overline{)4002} \\ \underline{40} \\ 2 \end{array}$$

The zero shows that there is nothing to divide, so write 0 in the quotient. Two cannot be divided by 20, so write a second 0 in the quotient.

The quotient is 200 with a remainder of 2.

The plane traveled at an average speed of slightly more than 200 miles per hour.

Copy the following examples. Divide and check.

A	B	C	D	E
6. $42 \overline{)8568}$	$34 \overline{)24038}$	$31 \overline{)6489}$	$54 \overline{)22032}$	$76 \overline{)7986}$
7. $35 \overline{)7023}$	$43 \overline{)12912}$	$56 \overline{)22400}$	$84 \overline{)50415}$	$62 \overline{)6234}$

Making Sure of Division

Copy these examples. Divide and check. If you need help, turn to the pages listed.

Set I

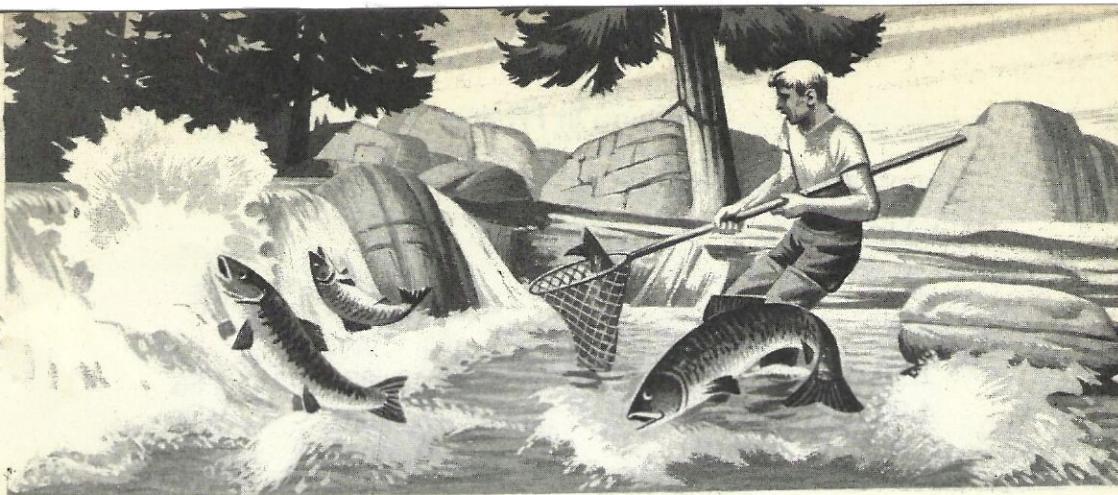
A	B	C	D	
1. $25 \overline{)60}$	$13 \overline{)78}$	$25 \overline{)84}$	$55 \overline{)352}$	136 137
2. $23 \overline{)414}$	$14 \overline{)329}$	$23 \overline{)882}$	$54 \overline{)2022}$	139 140
3. $42 \overline{)840}$	$23 \overline{)695}$	$34 \overline{)2040}$	$93 \overline{)7440}$	143 144
4. $49 \overline{)1776}$	$68 \overline{)1232}$	$59 \overline{)4382}$	$38 \overline{)1644}$	146 147

Set II

1. $38 \overline{)1978}$	$58 \overline{)3717}$	$69 \overline{)2488}$	$49 \overline{)2059}$	147
2. $56 \overline{)4224}$	$27 \overline{)798}$	$66 \overline{)2465}$	$86 \overline{)5298}$	148
3. $16 \overline{)96}$	$13 \overline{)108}$	$17 \overline{)102}$	$15 \overline{)65}$	149
4. $19 \overline{)45}$	$18 \overline{)65}$	$19 \overline{)183}$	$18 \overline{)140}$	150, Set I
5. $42 \overline{)\$9.66}$	$36 \overline{)\$20.55}$	$47 \overline{)\$39.48}$	$52 \overline{)\$18.78}$	152

Set III

1. $56 \overline{)504}$	$67 \overline{)608}$	$46 \overline{)4370}$	$36 \overline{)3322}$	154
2. $44 \overline{)14865}$	$66 \overline{)17688}$	$51 \overline{)43299}$	$84 \overline{)35536}$	157
3. $72 \overline{)14472}$	$43 \overline{)17286}$	$65 \overline{)19955}$	$54 \overline{)43524}$	158 159
4. $82 \overline{)32804}$	$96 \overline{)57608}$	$75 \overline{)60012}$	$67 \overline{)33515}$	159



Salmon Fishing

1. The largest of all salmon, the king salmon, has an average weight of 22 pounds, but a few have been caught that weighed as much as 100 pounds. This is how much more than average weight?
2. The pink salmon, or smallest variety, averages 4 pounds each. This is how much less than the average weight of the king salmon?
3. Some fishermen caught 4,510 pounds of salmon one day, 3,712 pounds the next day, and 5,080 pounds the third day. How many pounds did they catch in the three days?
4. In 1864, when most of the canning was done by hand, a daily output of 200 cases of canned salmon from one cannery was considered large. How many cases could be filled in 24 days?
5. At the present time, with machinery, one cannery can produce as many as 4,000 cases a day. How many cases can be produced in 24 days?
6. Some of the best canned salmon sells for 69 cents a can. At this price how much would Mrs. Roberts pay for 6 cans?

Keeping in Practice

Copy, work, and check:

1. Add:

A	B	C	D	E
\$9.76	\$5.25	\$.65	48	5
1.20	.05	.08	37	56
4.09	1.98	.35	4236	346
<u>.78</u>	<u>.68</u>	<u>4.00</u>	<u>3605</u>	<u>8685</u>

2. Subtract:

603	800	501	\$85.00	\$96.05
<u>246</u>	<u>730</u>	<u>65</u>	<u>29.07</u>	<u>36.28</u>

3. Multiply:

809	65	967	738	974
<u>6</u>	<u>48</u>	<u>75</u>	<u>309</u>	<u>800</u>

Divide:

4. $40 \overline{)800}$	26 $\overline{)1848}$	19 $\overline{)437}$	53 $\overline{)1908}$	58 $\overline{)1002}$
5. $29 \overline{)1920}$	44 $\overline{)1597}$	55 $\overline{)1635}$	27 $\overline{)1257}$	35 $\overline{)3308}$
6. $58 \overline{)1675}$	69 $\overline{)5823}$	28 $\overline{)1773}$	39 $\overline{)1736}$	76 $\overline{)2238}$
7. $48 \overline{)4588}$	59 $\overline{)2256}$	66 $\overline{)3320}$	94 $\overline{)4544}$	26 $\overline{)2490}$

8. The sum of 4286 and 5495 is ?.

9. The product of 98 and 56 is ?.

Do what the signs tell you:

10. $890 + 278 + 406 = ?$

12. $28 \times \$6.75 = ?$

11. $7000 - 4275 = ?$

13. $9463 \div 43 = ?$

A Million Is a Very Large Number

One day the teacher, Miss Thomas, asked a group of children what they thought of when they heard the word **million**.

Richard said, "I just think that a million is a very large number."

Philip said, "I often wonder if I take a million steps in a day."

Miss Thomas did some figuring. Then she told Philip that if he were to take steps two feet in length, he would have to walk more than 378 miles before he would have taken a million steps.

You can see that Richard was right. A million is a very large number.

A **million** is a thousand thousand. A small automobile can be bought for about one thousand dollars. One thousand of these cars would be worth about one million dollars.

It takes seven figures to write the number one million. How many zeros are needed?

Beginning at the right, large numbers are divided by commas into groups of three figures. 1,000,000

The large number at the right is read, "4 million, 826 thousand, 5 hundred 48." 4,826,548

Read these numbers:

- | | | |
|---------------|---------------|----------------|
| 1. 3,423,125 | 3. 8,045,010 | 5. 12,006,425 |
| 2. 15,000,485 | 4. 25,000,000 | 6. 100,456,000 |

What do you think of when you hear the word **million**?

Try to find large numbers in books and newspapers. Read them to the class.

7. Read the name of each state below, and the number which tells how many people lived in that state according to the 1950 census:

New York	14,830,192	Texas	7,711,194
California	10,586,223	Michigan	6,371,766
Pennsylvania	10,498,012	New Jersey	4,835,329
Illinois	8,712,176	Massachusetts	4,690,514
Ohio	7,946,627	Missouri	3,954,653

Read the sentences below. Then write in figures the numbers given in the sentences.

8. The United States bought Alaska from Russia in 1867, for seven million, two hundred thousand dollars.

9. In a recent year the fisheries of Alaska produced five hundred ninety-six million, fifty-two thousand pounds of fish.

10. The value of the fish produced that year was twenty-two million, two hundred eighty-eight dollars.

11. About eight hundred million dollars' worth of minerals have been taken from Alaskan mines.

12. The Alaska Highway, between Dawson Creek, British Columbia, and Fairbanks, Alaska, was built at a cost of one hundred thirty-eight million dollars.

13. In a recent year travelers from the East and Midwest spent three hundred fifty million dollars while visiting the Pacific Northwest.

14. The same year one million, four hundred thousand persons visited the Hoover Dam-Lake Mead area.

15. In one season the national parks in our country expected thirteen million visitors.

16. In one summer more than twenty million travelers visited Canada.

Making Sure of Numbers

The next nine pages are a review of the work in the first part of the book. The examples below will help you make sure that you can read, write, and understand numbers.

Write the following numbers in words:

A	B	C	D	E
1. 6,003	18,040	14,605	25,000	39,900
2. 248,690	300,000	540,008	8,486,000	12,000,869

Read these numbers and write them in figures:

3. Nine thousand, one
4. Twenty thousand, four hundred
5. One hundred six thousand, five hundred ten
6. Two hundred fifty thousand
7. Four hundred eighty-three thousand, two
8. Twenty million
9. Seven million, six hundred forty-two thousand, five hundred twenty-one

Answer the following questions:

10. How many ones are there in 3 tens? in 9 tens?
11. How many tens are there in 50? in 500?
12. How many hundreds are there in 956? how many tens? how many ones?
13. In the number 1,375,268, the figure 1 has what value?
14. What do the three zeros show in the number 8,000?
15. In which two of the following numbers does 4 have the same place value: 4,269; 344; 14,507; 10,489?

If you need more practice in reading and writing numbers, turn to pages 2 to 5 and pages 163 and 164.

Making Sure of Addition

Copy, add, and check the examples below.

If you make mistakes, study the pages listed at the right of the rows. There you will find other examples like those you missed. Work those examples again.

	A	B	C	D	E	
1.	4	9	50	45	34	17
	8	2	57	19	75	
	5	5	37	58	63	
	7	3	43	36	30	
	9	6	29	67	56	
	<u>6</u>	<u>4</u>				

2.	253	167	809	546	928	18,
	<u>587</u>	<u>438</u>	<u>695</u>	<u>77</u>	<u>487</u>	Row 5

3.	475	868	706	516	329	18,
	308	492	669	795	267	Rows 6, 7
	<u>495</u>	<u>606</u>	<u>436</u>	580	854	
				<u>347</u>	<u>35</u>	

4.	\$7.84	\$8.00	\$6.46	\$9.25	\$3.78	19
	8.39	8.37	6.53	1.16	.96	
	<u>.87</u>	<u>2.62</u>	<u>9.09</u>	<u>8.49</u>	<u>.59</u>	

5.	\$19.37	\$65.70	\$3.86	\$2.43	\$.84	20
	25.48	32.07	2.74	.09	.33	
	<u>37.00</u>	<u>3.75</u>	4.58	3.64	.80	
			<u>4.32</u>	<u>.75</u>	.06	
					<u>.42</u>	

Making Sure of Subtraction

Copy, subtract, and check:

	A	B	C	D	E	
1.	<u>857</u> <u>482</u>	<u>620</u> <u>270</u>	<u>518</u> <u>146</u>	<u>949</u> <u>398</u>	<u>826</u> <u>663</u>	29, Rows 1, 2
2.	<u>961</u> <u>298</u>	<u>442</u> <u>264</u>	<u>5626</u> <u>3097</u>	<u>6647</u> <u>2499</u>	<u>8970</u> <u>5487</u>	29, Rows 3, 4
3.	<u>708</u> <u>149</u>	<u>934</u> <u>607</u>	<u>505</u> <u>276</u>	<u>800</u> <u>358</u>	<u>8700</u> <u>1436</u>	30, 31, Rows 1, 2, 3
4.	<u>\$33.00</u> <u>13.23</u>	<u>\$71.00</u> <u>55.14</u>	<u>\$95.40</u> <u>78.79</u>	<u>\$85.46</u> <u>55.89</u>	<u>\$13.63</u> <u>8.75</u>	32

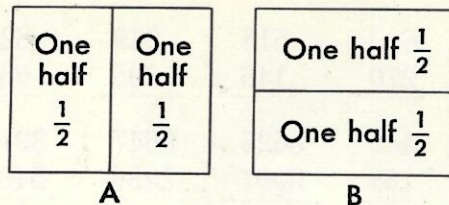
Making Sure of Multiplication

Copy, multiply, and check:

	A	B	C	D	E	
1.	<u>23</u> <u>49</u>	<u>67</u> <u>65</u>	<u>76</u> <u>82</u>	<u>89</u> <u>73</u>	<u>43</u> <u>45</u>	79
2.	<u>87</u> <u>60</u>	<u>95</u> <u>80</u>	<u>\$.78</u> <u>50</u>	<u>\$.57</u> <u>30</u>	<u>\$.75</u> <u>70</u>	81 82
3.	<u>875</u> <u>94</u>	<u>948</u> <u>58</u>	<u>694</u> <u>46</u>	<u>853</u> <u>72</u>	<u>346</u> <u>39</u>	85
4.	<u>60</u> <u>80</u>	<u>630</u> <u>40</u>	<u>604</u> <u>90</u>	<u>900</u> <u>70</u>	<u>700</u> <u>80</u>	89 90
5.	<u>704</u> <u>36</u>	<u>705</u> <u>59</u>	<u>400</u> <u>72</u>	<u>500</u> <u>84</u>	<u>900</u> <u>59</u>	92

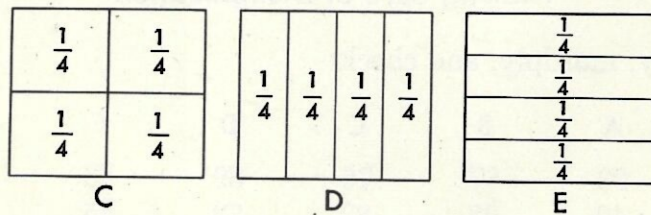
Halves, Fourths, and Eighths

1. The children in Miss West's class folded papers in different ways to show $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$.

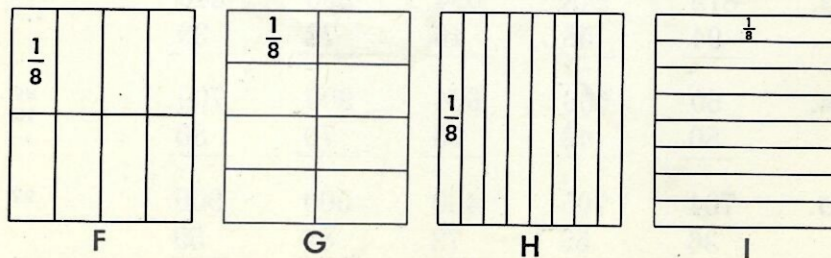


Figures A and B show two ways to fold paper into halves. The paper may be folded either way, but must be divided into **two** parts which are **equal in size**.

2. Figures C, D, and E show papers folded into 4 equal parts. What is each part called? Are the parts exactly the same size in Figure C? in D? in E?



3. Figures F, G, H, and I show papers divided into how many equal parts? What is each part called? Are the parts exactly the same size in Figure F? in G? in H? in I?



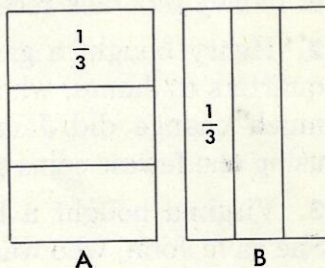
4. Now fold a sheet of paper, first into halves, then into fourths, and then into 8 equal parts. You may fold it in any of the four ways shown in Figures F to I. Color $\frac{1}{2}$ of the sheet in one color. Then color $\frac{1}{4}$ of the sheet in another way, and $\frac{1}{8}$ of it in still another color.

5. How many fourths equal one-half? Is $\frac{1}{4}$ a half of $\frac{1}{2}$? How many eighths equal $\frac{1}{2}$? How many eighths equal $\frac{1}{4}$? Is $\frac{1}{8}$ a fourth of $\frac{1}{2}$? Is $\frac{1}{8}$ a half of $\frac{1}{4}$?

Thirds and Sixths

1. Into how many equal parts are Figures A and B divided? What is each part called?

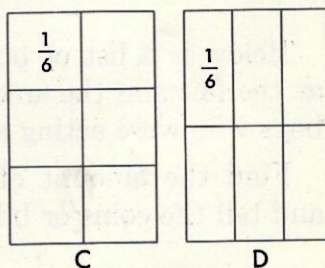
Is $\frac{1}{3}$ more, or less, than $\frac{1}{2}$?
Is $\frac{1}{3}$ more, or less, than $\frac{1}{4}$?



2. Figures C and D are divided into how many equal parts? What is each part called?

Is $\frac{1}{6}$ more, or less, than $\frac{1}{3}$?
Is $\frac{1}{6}$ one-half of $\frac{1}{3}$? How many sixths equal $\frac{1}{3}$?

How many sixths equal $\frac{1}{2}$?
How many sixths equal $\frac{2}{3}$?
Is $\frac{2}{3}$ more, or less, than $\frac{1}{2}$?



3. Now fold a sheet of paper into thirds, and then into sixths. Color $\frac{1}{3}$ of the paper in one color. Then color $\frac{1}{6}$ of the paper in a different color.

4. Write three fractions that have the same value as $\frac{1}{2}$.

5. Write a fraction that is equal to $\frac{1}{4}$; to $\frac{1}{3}$; to $\frac{6}{8}$.

6. Fractions such as $\frac{2}{2}$, $\frac{3}{3}$, and $\frac{4}{4}$ are equal to one whole. Write other fractions, each of which equals one whole.

Counting Your Change

Answer the questions asked in the problems below.
Turn to page 126 if you need help in counting change.

1. At the Boys' Club Fair and Carnival, the price of admission to the puppet show was 15 cents. Jack handed a dollar to Kenneth, who was collecting the money. How much change did he receive? When Kenneth returned the change, he said, "15, 25, 50, 75, one dollar." What pieces of money did Jack receive?
2. Henry bought a game that cost 59 cents. He gave 3 quarters to James, who was in charge of the booth. How much change did James give him? Count the change, using the fewest coins possible.
3. Virginia bought a book about photography for \$1.79. She gave John, who was selling the books, a five-dollar bill. How much money did she get back? If you were the clerk, what pieces of money would you give Virginia?

Below is a list of purchases made by different children at the fair and the amount of money each one gave to the boys who were acting as clerks.

Find the amount of change each child should receive and tell the coins or bills you would give as change.

PURCHASE	COST	MONEY GIVEN TO CLERK
4. Box of magic tricks	\$.89	Two half-dollars
5. Knife	\$1.15	One dollar, two dimes
6. Box of candy	\$.85	Half-dollar, two quarters
7. Photograph album	\$1.25	Two one-dollar bills
8. Book on birds	\$3.69	Five-dollar bill
9. Six candy bars	\$.36	One quarter, two dimes

Making Sure of Multiplication

Copy, multiply, and check:

	A	B	C	D	E	
1.	$\begin{array}{r} 3264 \\ \underline{38} \end{array}$	$\begin{array}{r} 3897 \\ \underline{16} \end{array}$	$\begin{array}{r} 3569 \\ \underline{52} \end{array}$	$\begin{array}{r} 7069 \\ \underline{79} \end{array}$	$\begin{array}{r} 5849 \\ \underline{84} \end{array}$	95
2.	$\begin{array}{r} 651 \\ \underline{276} \end{array}$	$\begin{array}{r} 420 \\ \underline{387} \end{array}$	$\begin{array}{r} 719 \\ \underline{594} \end{array}$	$\begin{array}{r} 865 \\ \underline{349} \end{array}$	$\begin{array}{r} 432 \\ \underline{536} \end{array}$	96, 97 Set I Rows 1, 2
3.	$\begin{array}{r} 807 \\ \underline{742} \end{array}$	$\begin{array}{r} 305 \\ \underline{568} \end{array}$	$\begin{array}{r} 680 \\ \underline{375} \end{array}$	$\begin{array}{r} 896 \\ \underline{800} \end{array}$	$\begin{array}{r} 970 \\ \underline{380} \end{array}$	97 Set I, Rows 3, 4 Set II

Making Sure of Division

Copy, divide, and check:

Set I

1.	$3\overline{)250}$	$5\overline{)447}$	$8\overline{)596}$	$6\overline{)493}$	$7\overline{)479}$	63
2.	$4\overline{)3944}$	$9\overline{)4789}$	$5\overline{)2318}$	$3\overline{)1139}$	$8\overline{)2197}$	63
3.	$8\overline{)3268}$	$6\overline{)4254}$	$9\overline{)7232}$	$5\overline{)3523}$	$4\overline{)2439}$	65

Set II

1.	$62\overline{)1178}$	$92\overline{)3775}$	$42\overline{)3158}$	$61\overline{)3299}$	$82\overline{)7973}$	131
2.	$48\overline{)13974}$	$65\overline{)19252}$	$81\overline{)25764}$	$12\overline{)5517}$	$32\overline{)19976}$	157
3.	$25\overline{)7550}$	$46\overline{)18492}$	$33\overline{)13497}$	$54\overline{)27329}$	$61\overline{)42768}$	158
4.	$36\overline{)28803}$	$74\overline{)51806}$	$44\overline{)39612}$	$57\overline{)22814}$	$66\overline{)19808}$	159

A Test in Problem Solving

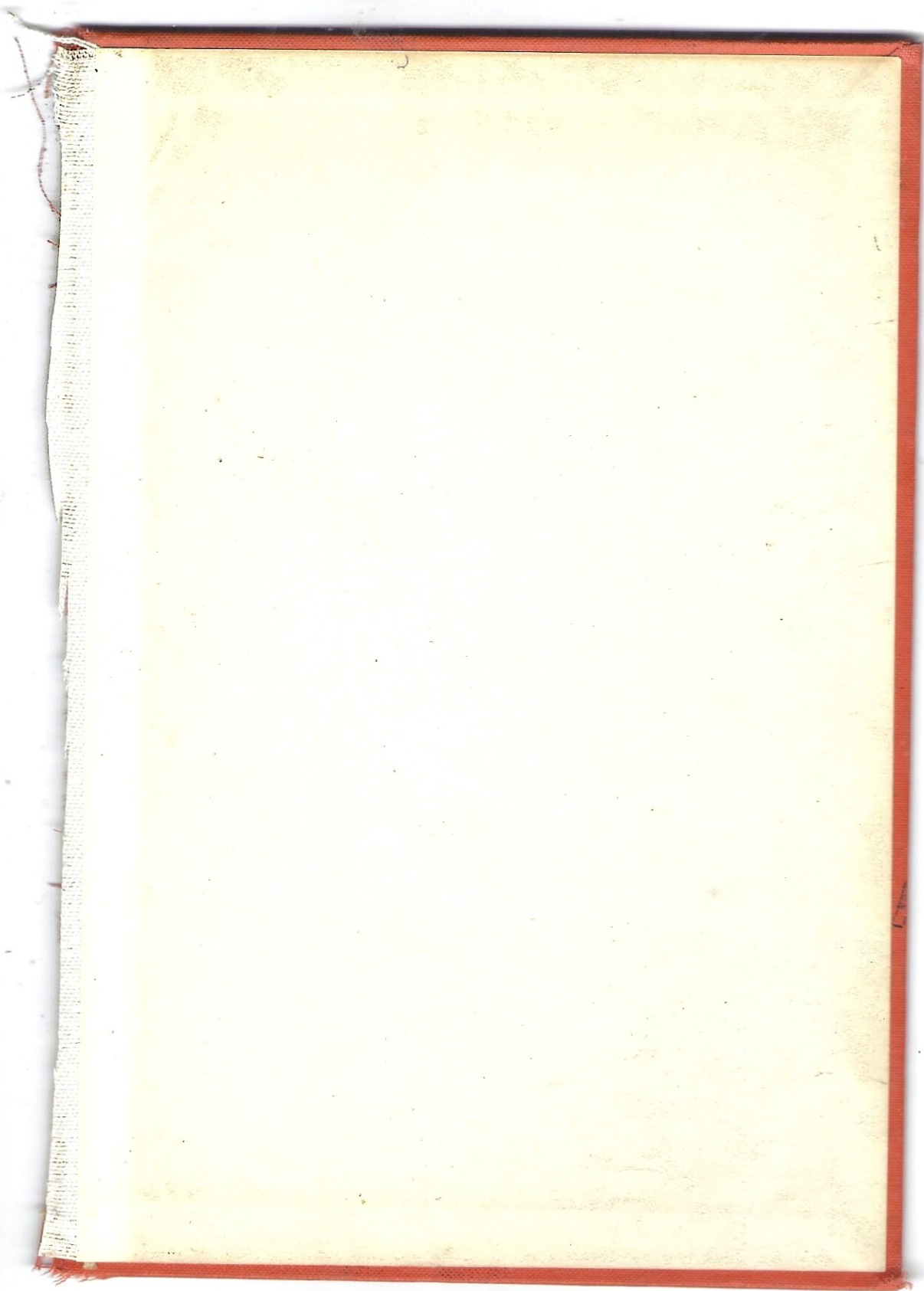
Read each problem carefully. Find what the problem tells you and what question is asked. Decide what to do to answer the question.

1. Mr. Jones bought a winter coat for \$57.50 and a suit for \$59.95. How much did he pay for both?
2. Jean earned \$1.15 and bought two 25-cent Savings Stamps. How much did she have left?
3. Roy had \$25.90 in the bank. He received \$8.35 for his birthday, and put it in the bank. Then how much did he have in the bank?
4. In Miss Adams' room there are 37 children. If each child uses 8 sheets of paper to make a scrapbook, how many sheets will be needed?
5. A large transport plane can fly at the rate of 275 miles an hour. At that rate, how far could it fly in 6 hours?
6. Mrs. Ames paid \$2.70 for 3 quarts of ice cream. What was the price per quart?
7. Mr. Slater bought 6 toy drums for \$5.34 to sell in his toy shop. What was the price of each drum?
8. One Saturday Jerry helped in his father's store for 3 hours. The next Saturday he helped for 2 hours, the next for 4 hours, and the next for 3 hours. How many hours of work did he average on these Saturdays?
9. Thirty-five children went on a picnic to Oak Creek. There were 18 girls. How many boys were there?
10. Alice's uncle earns \$11.50 a day. How much does he earn in a month that has 23 working days?
11. An express train made a trip of 248 miles in 4 hours. How many miles an hour did the train average?

12. Mrs. Bryan spent half a year in Mexico. How many months did she spend there?
13. How many hours are there in 4 days?
14. How many weeks are there in 42 days?
15. How many minutes are there in a day?
16. Mr. Macy bought 6 boxes of honeydew melons for his store. Each box contained 12 melons. If he sold them for 45 cents each, how much did he receive for the melons?
17. In one city 512 boys belong to a boys' club. If there are 16 groups of boys in the club, what is the average number of boys in a group?
18. A group of 4-H Club boys and girls chartered a bus to go to the state fair. The total charge was \$9.10. If 35 children made the trip, what was each one's share of the expense?
19. Jack saved \$10.20 one year. What was the average amount he saved in a month?
20. Fred received \$15 on his birthday. He spent $\frac{1}{5}$ of it for some records and put the rest of the money in the bank. How much did he spend? How much did he put in the bank?



TO BE
CONTINUED



**Making Sure
of
Arithmetic**

